I.P. File No. 48 1940 —4/

Previous reference :

Later reference :

GEN. & REV. SECRETARIAT

BOARD OF INDUSTRIAL PLANNING & CO-ORDINATION

SUBJECT.

Manufacture of Plastics and work done by the Sub-Committee

P.175/E

31/4/41

Date 11th Septr. 1940.

Notes

Subject :— Proceedings of the Plastics Sub Committee meeting held on the 22nd July 1940.

Submitted.

1) A copy of the proceedings of the meeting of the Plastics Sub Committee is submitted herewith for favour of perusal.

Director,
Sandalwood Oil Factory.

First Member of Council)

MPP
14/9

Bd Sele.
To be placed before the Committee at its next meeting.

14 9 40

Secty

1) As ordered the Proceedings of the Sub Committee will have to be placed before the Board at its next meeting

2) But in the Board meeting of the 3rd Sept it was decided that the Sub Committee should be dissolved

Date

Notes.

Subject :— .....

.....

.....

8/
Ask for a progress report
3/12

to pursue their investigations further & also to consider the Commercial aspect of the proposition & to furnish a Report to the Bd.

b) In view of the decisions already arrived at on 3.9.40, the Branding Scheme to which might may not be placed at the next meeting of the Board. It would suffice if a Technical note is put up at the meeting.

9/
Let us await further report
8/12

c) If approved the Commissioner (Mr V. Rama Rao) will be requested to forward the note & take action as above.

For orders

12/11/40. Secretary I.R.B.

D.O. Letter to Mr. Rama Rao (Commissioner) issued on 10.12.40.

a) orders of the Secretary on the file Drugs. Essential oils & Chemicals Sub Committee

b) " Please write to the Chairman, M.S.W. Bhadravati with regard to the production of formaldehyde on a Commercial Scale

c) D & P Note for approval

12/12

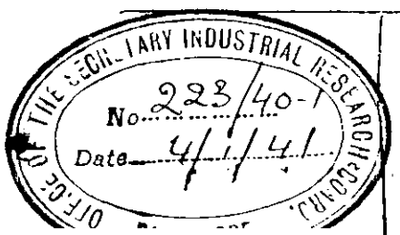
Approved by Secy & Issued on 12/12/40

INDUSTRIAL RESEARCH BOARD.

BOARD OF INDUSTRIES AND COMMERCE.

Subject FORMALDEHYDE - MANUFACTURE OF.

File No. of 19 .



'P'

Dated, 4th January 1941.

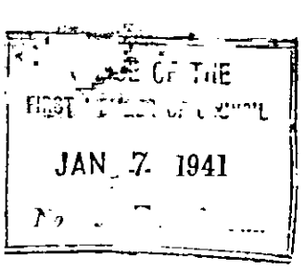
submitted.

(4) Letter No. 465 dated 19th December 40 from the Chairman, Mysore Iron and Steel Works, Bhadravati re: the manufacture of Formaldehyde is put up for kind perusal.

(5) The Chairman, intimates that the second hand plant, purchased from Messrs. Industrial Chemical Works, Kirloskaravadi (recommended by the Plastics Sub-Committee) is under despatch. He estimates the production at 5 tons per month of 40% solution of Formaldehyde.

(6) It may be noted here that the Chemical drugs, and Essential Oils Sub-Committee have also recommended the immediate necessity of taking up the manufacture of this chemical on a commercial scale in view of the potential demand and facilities existing in and outside the State.

'E'



(7) From page 2 of the proceedings of the Plastics Sub-Committee, it is made out that about 18 tons of Formaldehyde per year are required for the manufacture of the required quantity of bakelite powder consumed in the Government Electric Factory. Thus only 42 tons of the chemical will be available for sale on the market.

(8) Information re: present demand, prospective buyers etc. will be ascertained and furnished to the Chairman, Mysore Iron and

NOTE—Contn. Sheet.

WD 06643—GPB—500—20-5-40

p.t.o.

and Steel Works, as called for by him.

Secretary,
Industrial Research Board.

CHAIRMAN)

19/ Rec
8/1/41

9/1

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD
No. 96
Date 9-1-41
BANGALORE.

OFFICE OF THE
RECEIVED
JAN 7 1941
No. 6726

To Draft and fair letter to Chairman Iron Works Co. Formaldehyde, letter for Dir Offe

3/2

3/2/41

Con Page 3

I. R. B. 8] INDUSTRIAL RESEARCH BOARD.

NOTE.

Subject Manufacture of plastics; formaldehyde

File No. Sub-Committee of 19

-3-

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD. No. 456/40 Date 13/17-2-41 Ref. on file BANGALORE.

Submitted.

By D.O. letter No.31/40-41 dated 8th February 1941 from the Director of Sandal Oil Factory, Mysore regarding the manufacture furfural and his membership of the Plastics Sub-Committee is put up for kind perusal.

By A letter nominating Mr.S.G. Sastri, as an additional Member of the Plastics Sub-Committee will be sent to him.

By For kind approval.

K Seethaman

Dated, 13th/17 Feby.41. Secretary.

Chairman)

FEB 17 1941 821

By NM 17/2/41

By 19/2

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD. No. 226/40 Date 19/1/41 BANGALORE.

By Draft letter to Dr. S.O.F. put up for appl.

Appd by Secy on 19/2

By 19/2/41 Issued on 19/2

WD 01345—GPB—750—7-1-41

I. R. B. 8] INDUSTRIAL RESEARCH BOARD.

NOTE.

Subject .....Plastics Sub-Committee.....

File No. of 19

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD
No. 664/40-1
Date 28/5/41
and file
BANGALORE.

Dated, 28th May 1941.

Submitted.

2a) Copy of the proceedings of the Plastics Sub-Committee meeting held on 13th May 1941 at Bhadravati is herewith put up for kind perusal.

3) The Sub-Committee have considered several important technical points such as curing properties of the powders manufactured at Bhadravati, manufacture of furfural, paper laminated boards impregnated with resins etc.

2b) The Sub-Committee had also requested Mr. Paul of Mysore Iron and Steel Works to prepare two schemes on the manufacture of furfural and laminated sheets for the consideration of the Board. These schemes had been placed before the Board at its recent meeting held on 13th May 1941. It was decided that the Chairman, Mysore Iron and Steel Works ~~would~~ should find funds and arrange to conduct experiments on the manufacture of furfural at the Iron Works, and that the other scheme on laminated sheets might be referred to the Chairman, Mysore Iron and Steel Works for examination.

2c) The Sub-Committee have also resolved that

WD 01345—GPB—750—7-1-41

p.t.o.

NOTE.

Subject .....Plastics Sub-Committee,.....

File No. of 19 .

that Laboratory experiments have to be pursued for the manufacture of paraformaldehyde and Hexa-Methyline in view of their large demand in medical profession. The Convener of the Sub-Committee will be requested to take necessary further action in the matter.

Secretary.

Chairman)

30/5/41

3/6

By Letter to Convenor, Plastics Sub Committee & to The Chairman, M.S.S.W. Jointly for appl.

4/6/41. Secy) 4/6

By Issued

By An other meeting of the Sub Comm. was held on 3.9.41 Proceedings perused by Secy V.C & Chairman Vide letter of the Convenor & Proceedings recorded at the meeting of the Board on 15/9/41

15.9.41

OFFICE OF THE FIRST MINISTER OF COUNCIL
MAY 28 1941
No. 12427

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE.
No. 343
Date 2/6/41

WD 01345—GPB—750—7-41

NOTE.

Subject Plastics Sub Committee - Proceedings

File No. of 19

To The Chairman Mr. D.S.R.
Requested him to send Progress
Report on the Refractoriness of Laminated Sheet.
Issued on 29/X/41. This letter
in Sixth meeting file B5 file

Plastics Sub-Committee

BOARD OF INDUSTRIAL
PLANNING AND COORDINATION.

General and Revenue Secretariat | File No. | of 194 . | [App. F. III-2

Serial No.

35) The last meeting of the Plastic Sub Committee was held on 3.9.41. Mr. V. Rama Rao, Electrical Suppl. Gare Electric Factory is the Convenor of this Sub-Committee. The minutes of the Sub-Committee was reviewed by the Board at the meeting held on 15.9.41. The Convenor was requested on 1.10.41 to forward Progress reports in consultation with the Iron Works, on the several decisions of the Sub-Committee. Copy of this letter was also sent to the G.I. Mewar. M.I.S.W. -

36) The Sub Committee also decided that Samples of Formaldehyde prepared at the Iron Works may be sent to D.T.Lab.Y. for trial & opinion Accordingly, the Iron Works sent Samples of formalin 40% Technical grade to the D.T.Lab. 18.10.41 & also ~~Lab~~ reported that expts. on Paraformaldehyde & Hexamine of pure quality to suit Medical Profession was in Progress & that

NOTE—Cont. Sheet.

WD 04155—GPB—55,000—23-10-41

Plastics Sub-Committee

BOARD OF INDUSTRIAL PLANNING AND COORDINATION

General and Revenue Secretariat

File No. of 194 .

Serial No.

Representative samples would be sent, to the D.T.L. No reports have been received either from the Convenor of the Sub Committee or the Inspectorate in the matter. Reminders have also been issued.

The General Manager of the M.D.S.O. will be requested to expedite his report & to intimate the latest position, copy being sent to the * Convenor for info. & he will be requested to intimate the action taken by him in the matter & to intimate if any further meetings have since been held.

3rd Draft letter also submitted for Consideration.

3rd

30/6/42

Jh
30/6/42.

To. The Gl Manager. M.D.S.O.

Re. formal delegate.

Copy to Asst Dir. D.L. & Convenor Plastics Sub-Committee

To The Convenor, Plastics Sub Com.

Enquiries if any further meetings have been held & the action taken by him after previous meeting noted.

Copy to G.M. M.D.S.O. Bladnoch

Jh
2/7/42

BOARD OF INDUSTRIAL PLANNING AND COORDINATION.

Plastics Sub Committee Minutes

General and Revenue Secretariat | File No. | of 194 . | [App. F. III-2

Serial No.

Letter No. G.327 dated 18.7.42 from The Gl Manager M.I.S.W

Copy of invoice No. 1159 dated 19.7.42 from M.I.S.W.

3) The Gl Manager M.I.S.W reports that the manufacture of Bakelite Powder is temporarily stopped due to shortage of Phenol, new supplies of which are ~~which~~ expected shortly.

4) Furfural Plant is nearing completion towards be ready for trial within a short time.

4) Urea Plant is ~~expected to~~ being worked to collect operation data, & that further work in connection with urea plastics is in progress.

4) Exps on coffee plastics is being continued.

4) If appd, this report will be placed before the Board at the ensuing meeting.

4) From the copy of the invoice of the M.I.S.W. dated 19.7.42, it is made out that fresh batch of samples of Hexamine Pure ~~quality~~ and Technical quality & Para formaldehyde manufactured at the Ironworks

4)
4)
Subject matter in the agenda

NOTE—Cont. Sheet.

WD 64155—GPB—55,000—23-10-41

DP 39/41

Plastics - Sub Committee

BOARD OF TRADE
PLANNING AND COORDINATION

File No. of 194 . | General and Revenue Secretariat

Serial No.

have been sent to D.T. Lab^y. for trial & Opinion. Further report in this behalf may perhaps be awaited. Whether the D.T. Lab^ys. have furnished their opinion re: the Sample of formaldehyde 40% sent by the Iron Works some time back is not quite clear. If so the Sales Manager M.I.S.W. will be consulted in the matter. Perhaps the Report may be submitted to the Chairman & Dep^y Sec^y. for perusal for orders.

Ihs 21/7/42

Ujl 4/s

Ujl 4/s

Report (since received on 22.7.42)

OFFICE OF THE MINISTER FOR PRODUCTION & REVENUE 22 JULY 1942 No. 664

Ujl for perusal

(Miss Fairlie)

Dep^y Sec^y

Ujl 21/7/42

To 21.7.42

Ujl 23/7/42

To 21.7.42

WD 23/7

From the Sales Manager M.I.S.W. No. S. 1211 dated 20.7.42

Ujl The test Report refers to above

Serial No.

is for perusal. From the copy of the analytical report of the D.T.L, it is made out that the Samples of formalin 40% Technical grade manufactured at Bhadrawati have almost conformed to the B.S. Specifications, except in colour & formaldehyde Content. The % age of difference appears to be little which could perhaps be rectified or improved to suit the B.S. Standard. The Sample sent is reported to have contained some dirt, which will have to be eliminated. Perhaps the M.I.S.O may be requested to pursue the matter & complete the investigations by bringing the product to B.S. Standard

2) The test reports re: Paraformaldehyde & Hexamine are awaited.

It is also stated that small quantities of these chemicals are prepared in the M.D.O Lab.y. Large Scale manufacture have not yet been taken up & it is stated that if there should be a great demand, the M.D.O would arrange for the installation of the

NOTE—Cont. Sheet.

WD 04155—GPB—55,000—23-10-11

Plastics

BOARD OF INDUSTRIAL PLANNING AND CO-ORDINATION

File No. of 194 . General and Revenue Secretariat

Serial No.

the equipment at an early date. Perhaps the I.T.L may obtain their requirements from the Iron Works if the manufacture on a large scale is undertaken. It is a point for orders if this may be referred to the Govt Dir for pursuing the matter further.

for orders.

SS) 24/7/42

1) The M JSW will be addressed on the matter of completing the investigations in regard to formalin req. yes and to bring up the production to B.P. standard.

2) Test reports required will be awaited regarding Paraformaldehyde + Hexamine. yes.

MM 3

MM 2

Minister for Rev) SS) 30.7.42
Sec'y Dev Sec) 31.7 SS) MM 30/7/42 for 31.7

OFFICE OF THE MINISTER FOR FINANCE & REVENUE 31 JULY 1942 No. 1012.

MM 1/8 for 18

SS) D+7 letter to the JS manager. As I see. Put up for signature

Put up for signature

SS) 4/8/42

BOARD OF INDUSTRIAL
PLANNING AND COORDINATION.

Plastics.

General and Revenue Secretariat | File No. | of 194 . | [App. F. III-2

Serial No.

To. The Gl Manager. M. I. S. W.
Intimated that the exptl. may be
continued & the production brought up to
B.P. standard.

Jhz
15/8/42

From Mr. V. Rama Rao, Convenor
Plastics Sub Committee
No. 1302/S. 8. 42
Forwards a report on the work
done in connection with Plastics
at the M. I. S. W. on the suggestions
of the Sub Committee, as called
for.
1) Bakelite powder manufacture
has not yet been resumed for want
of Phenol, Supplies of which
have not yet arrived.
2) Urea formaldehyde will be
taken up at Bhadravati, immediately
Urea becomes available. Action is
being taken to have the addl. units
necessary in the Connection for the Pilot Plant
with regard to Urea manufacture & an estimate
for a one hundred weight Plant has been

NOTE—Cont. Sheet.

WD 04155—GPB—55,000—23-10-41

Plastics

BOARD OF INDUSTRIAL PLANNING AND COORDINATION

File No. 2P. 48/40-1 of 194 .

General and Revenue Secretariat

AUG 12 1942
No. 1464

Serial No.

Manufacture of the fabrication of the plant is reported to have been taken up at Bhadrawati

(a) A new black naldrug powder is reported to have been developed from the materials locally available samples of which have been sent to G.E. Factory for trial & opinion, & the report thereon is awaited. This is a new Planning investigation.

(b) The Report will be placed at the ensuing meeting & the subject is already on the agenda.

(c) The report is for perusal in the meanwhile

7/8/42

(Dep Secy) Min. Law)

(Minister for F & R)

by FS 7.8.42

17 AUG. 1942

by MP 11/8/42

by FS 11.8

by RC 12/8

by FS 17.8

(d) Remains at the meeting held on 15.9.42

Decision Communicated on 16.9.42

OFFICE OF THE MINISTER FOR FINANCE & REVENUE
1 AUG. 1942
No. 1275

This file relates to the work done by the Plastics Sub Committee of the Board of I.P. & the experiments conducted at the M. I. & D. Bhadrawati, in respect of Plastics. The Matters relating to the investigations in the use of Furfural, Formalin, Para-formaldehyde & Hexamine etc are separately pursued to facilitate prompt action. The Personnel of the Plastics Sub Committee (of the Board of I.P.) are noted in the margin

x
1) Mr. V. Rama Rao, Elec. Supdt. & E.I. (Convener)
2) Dr. M. Srinivasaiah, I. I. Science.
3) Mr. V. Paul, M.I.S.O.
4) Mr. Mohamad Ali, M.I.S.O.
5) Mr. S. G. Sastry, Rly. Dte & I.R.

It is ascertained that no meetings of the Sub Committee were held during 1942-3 & during the current year, but however the Sub Committee was in touch with the work done at Bhadrawati.

With the advice & collaboration of this Sub-Committee, the work at Bhadrawati has progressed very well & the M. I. & D. is now continuing further work in this direction. This Sub Committee has practically completed the work. With the Reconstitution of the Board of I.P. as the Board of Sc. & Ind. Res, this Sub Committee automatically becomes defunct but a formal intimation to the Convener dissolving the Sub Committee is however necessary.

It has also to be noted, in this

Plastics Sub Committee of the Board of D.P.

D.P. File No. 48
Continuation Sheet. Current No. of 40-1 Page. D.P. 78/ar

Conclusion, that a Separate Sub-Committee of the Board of Trade Committee had been set up to examine the establishment of a Plastics Concern on a Joint Stock basis; the Report of which is separately under the Consideration of Govt.

Under the above circumstances the Plastics Sub Committee of the Board of D.P may perhaps be dissolved this file closed. If however it is considered necessary for a Sub Committee of the above type, at any future date, a Separate Sub Committee of the Bd of Sc & Ind Res might be constituted when needed. (The work relating to the investigations on Plastics at the D. Trg Est will be kept watched & further action taken by the B.S.I.R.) Subject to orders

'A' - may be done

9/3/44

Minister. Dtd
Thro' Dep Secy)

10.3.44

Dft letter submitted

20/4

DC 338, & DP 338-5 Dtd 20/4

OFFICE OF THE MINISTER FOR INDUSTRIES & SUPPLY
MAR 14 1944
No. 5487

TELEGRAMS: G.E.F. TELEPHONE: 2046

V. RAMA RAO. ESQ., B.Sc.
SUPERINTENDENT

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

D.O. No. 6964.

Bangalore, 10th. January. 1940.

Dear Mr. Venkatachar,

With reference to your letter No.337-50 of 6th. instant, asking me to convene a meeting of the Sub-Committee regarding the manufacture of Plastics, I enclose herewith a copy of the letter received from Mr. Sreenivasiah of The Indian Institute of Science.

I propose to have the meeting at Bhadravati on the 16th. and 17th. of this month and would like to know beforehand if there is any provision to meet the travelling expenses of its members as I have to write to Mr. Sreenivasiah to be present at Bhadravati.

The proceedings of the Sub Committee and its proposals of further work to be done will be communicated immediately after my return to Bangalore.

Yours sincerely,

V. Venkatachar, Esq.,M.A.,B.Com.,
Secretary,
Board of Industries & Commerce,
BANGALORE.

HSK.

Encl: One.

for kind perusal and orders for the reply to be sent in the matter. We may perhaps address Govt. Deptl. Officers and Govt. Concerns to those Depts or Concerns. As regards non-Govt. concerns debiting T.A. of their T.A. may be paid out of allotments

GOVERNMENT ELECTRIC FACTORY

Bangalore,
10th January 1940.

Copy of D.O. letter dated 9th January 1940 from M. Sreenivasay Esq., Department of Biochemistry, Indian Institute of Science, Bangalore, to Mr. V. Rama Rao, B.Sc., Superintendent, Govt. Electr Factory, Mysore Road, Bangalore City.

My dear Mr. Rama Rao,

I have just received a copy of the Proceedings of the meeting of the Industrial Research Bureau Sub-Committee of the Board of Industries & Commerce held on Tuesday the 7th November 1939. In connection with the further investigation of the problem of Plastic a Sub-Committee consisting of myself, yourself and Messrs. Paul and Ahmed Ali of the Mysore Iron & Steel Works, has been constitute It is learnt from the Proceedings that the Mysore Iron and Steel Works have ordered for the equipment for conducting trials on the manufacture of plastics on a semi-commercial scale. Your Factory has been interested in utilising the moulding powders for the commercial production of various kinds of plastic ware.

The Proceedings does not give any detail as to the mechanism through which we can all meet and discuss the position of the research with regard to the production of plastics. It is true, each one of us is interested in this problem and it would be necessary for all of us to meet at a very early date and explore the possibility of an intensive collaboration with a view to speed up the researches we have on hand. What is of paramount importan is the production of moulding composition suitable for your purpos In achieving this, it may be perhaps necessary for all of us to meet at a very early date and pool all our experience and resource with a view to find out if something could not be taken up immediately.

I think it is necessary for the Sub-Committee to have a Conver who will call for meetings, record its proceedings and communicate with the Board of Industries and Commerce. I would request you to kindly give this matter your very consideration and take such steps as may be necessary to initiate the work of the Sub-Committee at a very early date.

With best regards,

Yours sincerely,

Sd. M. Sreenivasaya.

Bangalore,
10th January 1940.
KRI.

True Copy
A Ramanjanarao
for General Manage

K. V. PAUL, M.Sc

MYSORE IRON & STEEL WORKS
BHADRAVATI
(MYSORE STATE)

10.1.60

To

V Venkatachar Esq. M.A; B.Com.
Secretary, Board of Industries and Commerce

Dear Sir,

I acknowledge with thanks receipt of the copy of the proceedings of the meeting of the Industrial Research Bureau Sub-committee and request you to kindly give me the name of the Convenor of the Plastics sub-committee for which I have been selected as a member.

Thanking you

IWIR

Yours faithfully
K. V. Paul

13.1.60

Board of Dte

B'lore,

No. 371 — 15.1.60. dt 13.1.60.

Dear Sir,

With refce to yr. letter dated 10.1.1960, I am directed to inform you that Mr. V. Rama Rao, B.Sc. of the Govt. Electric Factory is the Convenor of the Sub-Committee re manufacture of Plastics.

Yrs. Sincerely

Asst. to 13.1.60.

K. V. Paul, Esqr M.Sc.,
Chemist,
Mysore Iron & Steel Works,
Bhadravati.

GOVERNMENT ELECTRIC FACTORY

TELE PHONE: 2046
GRAMS: "GEF" BANGALORE.
CODE. A. B. C. 6TH EDITION

MYSORE ROAD,
BANGALORE CITY.

2nd February 1940.

Ref. 8086

ELECTRICAL ENGINEERS

ILLUMINATING ENGINEERS

TOOL MAKERS

MACHINE TOOL MANUFACTURERS

PLASTICS MOULDERS

ELECTRICAL MATERIAL AND TRANSFORMER MANUFACTURERS

HARDWARE MANUFACTURERS

VILLAGE INDUSTRIES IMPLEMENTS MANUFACTURERS

WATER METER MANUFACTURERS

SCIENTIFIC INSTRUMENTS MANUFACTURERS

The Secretary,
Board of Industries & Commerce,
Bangalore.

Dear Sir,

A meeting of the Sub-committee for "The manufacture of Plastics" was held in Bhadravati, on the 16th and 17th of January 1940.

The report about the work done and the plan for further work will be sent to you during the course of next week.

Yours faithfully,
Government Electric Factory,

Rama Rao 2/2
Electrical Superintendent.

KRI.

BS Office
Ord. & Supply
Thank the supplier is requested properly

GOVERNMENT ELECTRIC FACTORY

TELEPHONE: 2046
GRAMS: "GEF" BANGALORE.
CODE. A. B. C. 6TH EDITION

MYSORE ROAD,
BANGALORE CITY.

2nd February 1940.

Ref. 8086

ELECTRICAL ENGINEERS

ILLUMINATING ENGINEERS

TOOL MAKERS

MACHINE TOOL MANUFACTURERS

PLASTICS MOULDERS

ELECTRICAL MATERIAL AND TRANSFORMER MANUFACTURERS

HARDWARE MANUFACTURERS

VILLAGE INDUSTRIES IMPLEMENTS MANUFACTURERS

WATER METER MANUFACTURERS

SCIENTIFIC INSTRUMENTS MANUFACTURERS

The Secretary,
Board of Industries & Commerce,
Bangalore.

Dear Sir,

A meeting of the Sub-committee for "The manufacture of Plastics" was held in Bhadravati, on the 16th and 17th of January 1940.

The report about the work done and the plan for further work will be sent to you during the course of next week.

Yours faithfully,
Government Electric Factory,

Rama Rao 2/2
Electrical Superintendent.

KRI.

BS Office
ord. & Survey is
that the report is
prepared

Board of Sc.

No. 461
8.2.40

8/2/40

B'lore,
7.2.40.

Dear Sir,

I ack. with thanks the receipt of your letter No. 8086 of 2.2.1940, re the meeting of the Sub-Committee for the "manufacture of Plastics" held in Bhadravati on the 16th and 17th Jany. 1940.

I shall be eagerly awaiting the report on the subject for being placed before the meeting of the Board of Sc. to be held on Saturday the 2nd March 40.

Thanking you,

Yrs. Sincerely,

T.S.

8/2/40

8.2.40.

V. Rama Rao, Esq B.Sc.,
Electrical Engineer
Govt. Electric Factory,
Mysore Rd.,
B'city

7.2.40

GOVERNMENT ELECTRIC FACTORY

PHONE : 2046
TELEGRAMS: "GEF" BANGALORE.
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.
12th. February 1940,
Ref. G- 8532

The Secretary,
Board of Industries & Commerce,
B A N G A L O R E.

Dear Sir,

I wish to draw your attention to my D.O. letter No. 6964 of 10th January 40

I am herewith forwarding a copy of the letter received from Mr. M. Sreenivasaya of The Indian Institute of Science.

Please let me know to whom my and Mr. Sreenivasaya's T.A. bills have to be sent.

The matter may be treated as urgent.

Yours faithfully,
Government Electric Factory.

Rama Rao 12/2
Electrical Superintendent.

HSK.

Encl: One.

BS office

Mr Rama Rao's T.A. bill
have to be borne by the Govt Electric Factory.
for his journey may claim his T.A
as per M.S.R. (single first class & single
2nd class if he had taken a servant- and
Rs 5 T.A.) Send a certificate of
attendance to Mr Srinivasaya
12/2

GOVERNMENT ELECTRIC FACTORY

CONTINUATION SHEET ..... DATE .....

D.O.

Copy of/letter dated 8th. instant from Mr. M. Sreenivasaya, Department of Biochemistry, Indian Institute of Science, Bangalore, to Mr. V. Rama Rao, B.Sc., Convenor, Plastics Committee Govt. Electric Factory, Bangalore.

I shall be obliged if you will kindly let me know the procedure which I have to adopt for claiming travelling expenses in connection with my visit to Bhadravati for attending the first meeting of the Plastics Committee. Please let me know if I could send the bill to you.

With best regards,

Sd. M. Sreenivasaya.

Bangalore.
12-2-40.
HSK.

Rama Rao 12/2
Electrical Superintendent,
Govt. Electric Factory.

Mr.V.Venkatachar,M.A.,B.Com.,
Asst. & Secretary, Board of
Industries & Commerce .

16th Feb. 40.

Dear Sir,

Subject: T.A. for attending Sub-Committee meetings.

I have for acknowledgement your letter No.8552 dated 12th instant on the above subject and in reply, I write to say that your T.A. for journeys made to Bhadravati and back will have to be met from the Factory Funds and that of Mr. Srinivasaiya of the Indian Institute of Science will be paid by the Comptroller to whom he has to present a T.A. Bill prepared according to the provisions of the M.S.R. I am writing to him accordingly enclosing a certificate for having attended the meeting at Bhadravati.

Yours sincerely,

B.Rama Rao,Esq.,
Electrical Superintendent,
Government Electric Factory,.

Mr. V. Venkatachar, M.A., B.Com.,

Asst. & Secretary, Board
of Industries and Commerce.

No. 512/E2

19th February 1940.

Dear Sir,

I write to state that your demi-official letter dated 8th instant to the Electrical Superintendent, Government Electric Factory, Bangalore, regarding T.A. for attending the first meeting of the Plastics Sub-Committee at Bhadravati has been forwarded to me.

The claims on account of your travelling allowance for journeys to Bhadravati and back have to be preferred on a T.A.Bill, (form enclosed) supported by the attached T.A. Certificate. Details of T.A. to be claimed are as under:

Single First class to & fro.

Single III Class for a servant (if you had taken a servant),

Daily Allowance : Rs 5/-.

The T.A.Bill prepared as above may be forwarded to the Comptroller to the Government of Mysore, for audit and return to you for encashment.

Yours sincerely,

M. Sreenivasaiya, Esq., M.Sc.,
Department of Bio-Chemistry,
Indian Institute of Science,
Bangalore.

SRS.

GOVERNMENT OF MYSORE.

BOARD OF INDUSTRIES AND COMMERCE.

Certified that Mr.M. Srinivasaiya, Department of Bio-Chemistry, Indian Institute of Science, Bangalore, attended the meeting of the Plastics Sub-Committee held at Bhadravati on 16th & 17th Jan. 40, as a member thereof.

20.2.40

Bangalore,
19th Feb. 1940.

Secretary,
Board of Industries and
Commerce.

GOVERNMENT ELECTRIC FACTORY

PHONE : 2046
TELEGRAMS: "GEF" BANGALORE.
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.

21st. February '40
Ref. G- 8948.

The Secretary,
Board of Industries & Commerce,
B A N G A L O R E.

Dear Sir,

I am herewith sending you a copy of the Proceedings of The Plastics Sub-Committee held at Bhadravati on 16th. and 17th. January 1940.

Please acknowledge receipt.

Yours faithfully,

Rama Rao 24/2/40
Convenor,
PLASTICS SUB-COMMITTEE.

HSK.

Encl: One.

22.2.40

Proceedings of the meeting of the Sub-committee of PLASTICS held on 16th. & 17th. January 1940 at Bhadravati.

P r e s e n t.

Mr. M. Sreenivasaya,	Department of Biochemistry, Indian Institute of Science, Bangalore.
Mr. V. Paul,	Chemists, The Mysore Iron and Steel Works, Bhadravati.
Mr. Mahammad Ahmed	
Mr. V. Rama Rao, (Convenor).	The Electric Superintendent, Government Electric Factory, Bangalore.

At the outset, Mr. V. Rama Rao explained the general requirements of the Bakelite Section of the Electric Factory. He referred to the existence of several other bakelite factories in the country and pointed out that the entire quantity of the moulding powder consumed by all these factories was now being imported from abroad.

Two classes of moulding powders in general were being requisitioned: (i)powders of the Phenol Formaldehyde class and (ii) powders of the Urea-Formaldehyde class. The former class was being imported in greater quantities and more extensively employed by the factorie while the Urea-Formaldehyde mixture was used for the better class of moulded ware which was being produced in the country to a limited extent.

Mr. M. Sreenivasaya then explained that the chief problem which faced the Committee was to explore the possibility of finding the essential raw materials neede for the production of the plastic compositions. moulding powder, he continued, consists of a binding resin, a fibrous material, a filler, a plasticiser,

contd.

pigments etc. Of these, the first three are important since they account for about 90% of the mixture. The fibrous material and the filler can be had in plenty in the State. We have several kinds of wood which can be suitably treated to yield wood flour of fine quality for incorporation in moulding powders. Mr. Paul has already conducted a few experiments successfully in making wood flour.

The main problem however is the production of the resin. The wood distillation which is an auxilliary industry at Bhadravati provides the necessary raw material, Methyl alcohol, for the production of Formaldehyde. The manufacture of Formaldehyde is a well known process which was being carried out by the Kirloskers. We understand that the entire plant is now available for sale.

The one constituent which we do lack is the Phenol, which is being produced to a certain extent during the distillation of coal. It must also be pointed out in this connection, that Phenol is a synthetic product and very large quantities of this material is being produced by the synthetic method. It is a matter for experiment and careful investigation to determine the possibility of producing the resin from imported Phenol at an economic price. Messrs. Paul, and Mahommed Ahmed pointed out that an order for a Pilot plant had already been placed for conducting such experiments. They added that in the first instance the chemicals also had been ordered. We suggest that these experiments be carried out under very carefully controlled conditions so as to enable one to determine the cost of manufacture. These data would be very valuable and very important.

contd.

The possibility of finding phenolic bodies suitable for condensation with Formaldehyde to yield a plastic, will have to be intensively explored in the interests of national economy. It is also necessary to investigate the possibility of utilising vegetable oils for resinfication and also the commonly occurring resins after suitable modification for replacing bakelite. This involves intensive research on raw materials of Indian origin. A detailed report on this aspect of the question will be submitted in due course.

It was suggested that the moulding powder which is being produced on an experimental basis at Bhadravati, should be tried at the Government Electric Factory and the electrical properties tested according to the British Association specifications. It was suggested that one of the Chemists at Bhadravati might come over to Bangalore to conduct these experiments at a very early date.

It is proposed to hold the next meeting of the Committee at Bangalore, when the Chemists from the Iron and Steel Works come here to test the powder manufactured by them.

-ooOoo-

Bangalore,
Dated: 21-2-1940.
KRI.

Rama Rao 21/2
Convenor.
PLASTICS SUB-COMMITTEE.

20745

5th May 1940. xx

6

V. Venkatachar Esq.,M.A.,B.Com.
XXXXXXXXXXXXXXXXXXXXXXXX

Dear Sir,

Subject: Plastics Sub-Committee.

I am to invite a kind reference to your letter No.G.8948 dated 21-2-'40 enclosing a copy of the Proceedings of the meeting held on 16th and 17th January 1940. I request you kindly to let me know the further progress in the experiments conducted and whether any meetings have been held since then, and if so, to kindly send me a report for being placed before the next meeting of the Board. The detailed report on utilizing vegetable oils promised may also be sent.

An early reply is requested.

Yours sincerely,

V. Rama Rao Esq.,B.Sc.,
Ag.General Manager,
Govt.Electric Factory,
Mysore Road,
Bangalore.

SGR-2)

It is the considered view of the Sub-Committee that the extended cultivation of the above should be undertaken by the Agricultural and Forest Departments on their Farms specially started for the purpose. The Industrial and Testing Laboratory may also raise a Farm of its own for purposes of research and the work in this direction should go on in close co-operation with the departments concerned.

The Sub-Committee further recommends that investigation into the possibilities of growing the following on a commercial scale may be taken up by the Departments noted against them as they will largely aid the growth and development of the local industry.

(1)	Cultivation of	Belladona	
(2)	do	Digitalis Lanata,	Agriculture Department.
(3)	do	Rhubarb.	
(4)	do	Peppermint, and	
(5)	do	Lavendar	
(6)	do	Cinchona.	
(7)	do	Ipecacuahna.	Forest Department
(8)	do	Hyoscyamus, and	
(9)	do	Artemesia (for santonine)	

The Sub-Committee also suggests that the possibilities of indigo cultivation should be re-explored in the light of the experience of the last War.

iv. Manufacture of Chemicals, Drugs, Medicines, and Essential Oils.

The consideration of the question of manufacturing chemicals, drugs, medicines and essential oils in demand in the State was referred to another small Sub-Committee consisting of the following members.

1. Dr, P. C. Guha,
2. Dr. B. Sanjeeva Rao,
3. Dr. B. L. Manjunath,
4. Mr. B. H. Krishna, and
5. Mr. M. S. Krishna Rao.

This Sub-Committee considered (i) the possibilities of immediately undertaking the manufacture of certain chemicals, and (ii) investigations into the feasibility of manufacturing certain other chemicals on a commercial scale and submitted their report to the main Sub-Committee, which, after reviewing the same, adopted the following decisions.

1. The production of Formal-de-hyds on a commercial scale should be taken up immediately since there is a great demand for the same and facilities for the manufacture of this chemical are available.

2. The investigation of the possibility of producing the following chemicals may be taken up immediately :—

(1) Citral—Ionone—Geraniol—Citronellol—Linaeol—Rhodinol—Lemon and Orange Oils and Derivatives.
(2) Tannic Acid, Tartaric Acid, Citric Acid, and Lactic Acid.
(3) Ammonium Salts other than Ammonium Sulphate.
(4) Silver Proteins and Silver Salts.
(5) Caffeine.
(6) Plastics.
(7) Saccharin.
(8) The production of Camphor from Indiain Turpentne Oil.
(9) The convertion of Turpentine Oil into Terpineol.
(10) Production of Phenyl Ethyl Alcohol.
(11) Production of Artificial Musk.

Note :—The investigations which are already in progress in the Indian Institute of Science and other Laboratories in the State regarding some of the above chemicals may be continued.

Staff necessary for purposes of extended research work recommeaded by the Sub-Committee.

In order to conduct investigations into the possibility of extended cultivation of plants of medicinal importance and value and to conduct research work in regard to the manufacture on a larger scale of chemicals and medicines at competitive prices as also to investigate into the commercial possibility of producing certain chemicals and medicines which have proved a success in Laboratories, the Sub-Committee recommends the

appointment of the following Research Staff distributed over the several laboratories as indicated against them:

Two Research Chemists for a period of three years	...	Indian institure of Science.
Two Research Chemists (Permanent)	...	Central College.
Four Research Chemists do	...	Industrial and Testing Laboratory
One Pharmocologist do	...	Industrial and Testing Laboratory.
One Research Chemist do	...	Government Soap Factory.

RESEARCH ON FARMS.

One Plant Physiologist or Bio-Chemist (Permanent)	...	Agricultural Department.
do do	...	Forest Department.

The Sub-Committee also suggests that the heads of the above Departments will, in consultation with one another, assign items of research work to be undertaken in the several departments, such that, any possible over-lapping of work is avoided.

vi. Co-operation between Departments concerned with a view to co-ordinating results.

The Sub-Committee is of the opinion that the Departments mentioned above should work in close co-operation with one another in order to facilitate the Research work undertaken by them and to explore all possibilities by mutual exchange of ideas and by comparing results and meeting as often as necessary, to see how best the local demand for chemicals, drugs, medicines and essential oils could be met by local manufacture availing of the resources aud facilities available in the State, and dependence on foreign imports minimised to the extent possible as the supply of chemicals and drugs constituted a very important and vital problem.

V. VENKATACHAR,

Secretary
Board of Industries and Commerce.

S. SUBBA RAO,

Chairman of the Chemicals and Drugs Sub-Committee

Bangalore.
6/6/40.

BOARD OF INDUSTRIES AND COMMERCE.

Sub-Committee relating to the manufacture of Chemicals, Drugs and Essential Oils.

Statement showing the estimated quantities of Chemicals, Drugs, Medicines and Essential Oils consumed annually for medicinal purposes in Bangalore City and Cantonment.

Description of the articles	Approximate Annual Consumption
I. TINCTURES.	lbs.
1. Asafetida ...	No information.
2. Amentii ...	Do
3. Belladona ...	2,000
4. Calumba ...	1,000
5. Capsicum	200
6. Cardamom ...	5,000
7. Catechu ...	100
8. Cinchona ...	10,000
9. Digitalis ...	10,000
10. Gentian ...	5,000
11. Hyoacyamus ...	10,000
12. Ipecacuanha ...	10,000
13. Lobelia ...	2,000
14. Nux Vomica ...	5,000
15. Opium ...	500
16. Camphor Co. ...	10,000
17. Quassia ...	500
18. Squill ...	10,000
19. Senega ...	10,000
20. Shophanthus ...	500
21. Quin Annon ...	20,000
22. Iodine ...	5,000
23. Valerian ...	1,000
24. Ginger ...	1,000
II. VEGETABLE EXTRACTS.	
1. Belladonna ...	10,000
2. Cascara ...	5,000
3. Cinchona ...	No information.
4. Genlian ...	2,000
5. Liquorica ...	2,000
6. Hyoscyamus ...	100
7. Ipecacuanha ...	5,000
8. Malt ...	2,000
9. Nux Vomica ...	5,000
10. Opium ...	1,000
11. Senega ...	Not imported.
12. Senna (leaves) ...	1,000
13. Ergot ...	5 000
14. Aurantii ...	Not used as extract.
15. Buchu ...	
16. Jalap ...	1,000
(Not used as extract but as pelvis).	...
17. Rhubail ...	500
18. Digitalislanata (used only as tincture).	...
19. Aloes ...	100
III. ACIDS, ETC.,	
1. Boric Acid ...	10,000
2. Tannic Acid ...	1,000
3. Hydrochloric Acid ...	2,000
4. Nitric acid ...	2,000
5. Sulphuric acid ...	1,000

Description of the articles	Approximate Annual Consumption
III. ACIDS, ETC.,—*contd.*	lbs.
6. Alum ...	1,000
7. Borax ...	1,000
8. Glycerine ...	22,400 (10 tons)
9. Acetic acid ...	2,000
10. Acetyl Salicylic ...	5,000
11. Citric acid ...	1,000
12. Tartaric acid ...	1,000
IV. SPIRITS.	
1. Camphor ...	500
2. Chloraform ...	2,000
3. Peppermint ...	2,000
4. Ether ...	10,000
5. Nitrous Ether ...	
V. SYRUPS.	
1. Amani ...	Information re: the consumption of these is not available. it is learnt that most of these manufactured locally.
2. Lemon ...	
3. Tolu ...	
4. Ginger ...	
5. Ferr. Iod. ...	
6. Glycerophosphates ...	
7. Easton ...	
VI. COMPOUNDS, SALTS, ETC.,	
1. Ammonium Carbonate ...	5,000
2. „ Chloride ...	5,000
3. Silver Nitrate ...	100
4. Bism. Subnitrate ...	5,000
5. „ Carbonate ...	5,000
6. „ Salicylate ...	500
7. Calcium Lactate ...	5,000
8. Mercuric Chloride ...	100
9. Mercurous ...	1,000
10. Magnesium Oxide ...	100
11. „ Carbonate ...	5,000
12. „ Sulphate ...	2,24,000 (100 tons.)
13. Lead Actate ...	500
14. Potass Iodide ...	5,000
15. „ Bromide ...	10,000
16. „ Chlorate ...	2,000
17. „ Citrate ...	5,000
18. „ Permanganate ...	1,000
19. „ Acetate ...	10,000
20. Sodium Bromide ...	2,000
21. „ Carbonate ...	100
22. „ Citrate ...	5,000
23. „ Potas Tartaras ...	1,000
24. „ Idodide ...	10
25. „ Phosphate ...	500
26. „ Salicylate ...	20,000
27. „ Gluconate ...	No consumption.

Statement showing the estimated quantities of Chemicals, Drugs, Medicines and Essential Oils consumed annually for medicinal purposes in Bangalore City and Cantonment—*contd.*

Description of the articles	Approximate Annual Consumption	Description of the articles	Approximate Annual Consumption
VI. COMPOUND, SALTS, ETC.,—*contd.*	lbs.	X. ESSENTIAL OILS AND FIXED.	lbs.
28. Hexamine ...	5,000	1. Anisi ...	100
29. Chloroform ...	10,000	2. Cajuput ...	200
30. Ether ...	5,000	3. Chenapodium ...	1,000
		4. Cinnamon ...	1,000
VII. COMPLEX SUBSTANCES.		5. Clove ...	500
		6. Eucalyptus ...	5,000
1. Salyrgan ...	(Sold only as ampoules)	7. Peppermint ...	1,000
2. Mercurochrome ...	50	8. Sandalwood ...	No information.
3. Acriflavine ...	31 (500 ozs)	9. Turpentine ...	10,000 (1,000 gals).
4. Sulphanilamide ...	100	10. Castor Oil ...	56,000 (2,000 local Mds.)
5. Sanocrysin ...	100	11. Almond Oil ...	1,000
6. Solganol ...	10	12. Chaulmoogra ...	1,000
7. Protargol ...	125 (2,000 ozs)		
8. Argyrol ...	312 (5,000 ozs)	XI. MISCELLANEOUS.	
9. Albargin ...	6 (100 ozs)	1. Plasters ...	No information.
10. Carbarsone ...	No information.	2. Fish Liver Oil ...	20,000 (2,000 gals.)
11. Bismuthoidal ...	2,000 boxes of 10 ampoules each.	3. Liver Extract ...	No information.
Salvarsan—neo ...	50,000 tubs.	4. Fer. et Amon. Cit. ...	10,000
13. Caramine ...	No information.	5. Fer. et Quin. Cit. ...	1,000
14. Chlorine ...	,,	6. Liniment Belladona ...	It is reported that these are manufactured locally as and when required. Information re: the consumption of these is not available.
15. Oxygen ...	,,	7. ,, Camphor ...	
		8. ,, Amoniated Soap ...	
VIII. BIOLOGICAL PRODUCTS.		9. ,, Turpentine ...	
1. Adrenalin ...	62 (1,000 ozs)		
2. Pituitarin ...	1,000 boxes of 6 ampoules each.	11. Glycerin ...	22,400 (10 tons)
3. Thyroid ...	No information.	12. Ointments ...	...
4. Testicular ...	,,	Boric acid) ...	10,000
5. Ovarian ...	,,	Salicylic (acid) ...	1,000
6. Lutein ...	,,	Tamicaced ...	No information.
7. Insulin ...	5,000 tubes.	Flavine ...	6 (100 ozs)
8. Vitamins ...	No imports.	Mercury, etc., ...	No information.
		Sulphur (powder) ...	5,000
IX. ALKALOIDS.		Zinc (oxide) ...	5,000
		White Vaseline ...	2,000
1. Atropine ...	12 (200 ozs)	Yellow ,, ...	25,000
Caffeine	1,000	13. Injections in Ampoules ...	No information.
3. Ematine ...	5,000 boxes of 6 ampoules each.	14. ,, Vaccines ...	
4. Ephedrine (powder) ...	100	15. ,, Sera ...	
5. Morphine ...	10		
6. Quinine ...	10,000		
7. Strychnine ...	500		
8. Santonin ...	25		

Note.—The total value of the above chemicals, Drugs and Medicines etc., utilized in the State annually for medicinal purposes is estimated at Rs. 25 lakhs.

V. VENKATACHAR,

Secretary,
Boards of Industries and Commerce.

WD 04824—GBP—1,000—22-5-40

(Confidential) Secret

Second Proof for Press

BOARD OF INDUSTRIES AND COMMERCE.

CENTRAL INDUSTRIAL RESEARCH BUREAU.

4.6.40

Report of the Sub-Committee of the Board constituted to examine the question of the possibility of undertaking the manufacture of Chemicals, Drugs, Medicines and Essential Oils in Bangalore.

General.

At the meeting of the Central Industrial Research Bureau held in Bangalore on the 7th November 1939, a number of Sub-Committees were constituted to consider and report on the problems of immediate industrial importance which called for research work being undertaken urgently with a view to organising regular supply of raw and semi-processed materials to the several Government and aided industrial concerns which were, at present, importing these materials and the imports of which had been rendered costly and difficult owing to the War.

Chemicals and Drugs Sub-Committee its personal and terms of reference.

Among other important Sub-Committee, a Sub-Committee Comprising the following members, was formed to go into the question of the manufacture of chemicals drugs and essential oils in demand in Mysore and to make recommendations as to how far the manufacture of these, which were at present being imported, could be undertaken in the State to meet local as wall as the Indian demand.

1. *Sastravaidyapravina*
   Dr. S. Subba Rao, B.A., M.B.C.M. L.R.C.P. (Lond.),
   M.R.C.S. (Eng), D.P.H.,
   Retired Senior Surgeon (*Chairman*).

2. Dr. B. T. Narayan, B.A., Ph.D., D.Sc.,
   Agricultural Chemist,
   Department of Agriculture.

3. Mr. B. H. Krishna, M.Sc., A.I.C., A.I.I. Sc.,
   Chief Chemist.
   Industrial and Testing Laboratory.

4. Dr. B. L. Manjunath, B.A., M.Sc., D.Phil.,
   Professor of Organic Chemistry,
   Central College.

5. Mr. B. Sanjeeva Rao, B.A., M.Sc. (Mad). F.I.I. Sc.,
   Indian Institute of Science.

6. Dr. P. C. Guha, D.Sc. (Cal.),
   Indian Institute of Science.

7. Dr. L. S. Doraswami, M.Sc. (Lond), Ph.D. (Lond),
   Economic Botanist, Department of Agriculture.

8. Dr. M. N. Ramaswami, M.Sc., D.Sc.,
   Forest Chemist,
   Forest Research Laboratory.

9. Mr. M. S. Krishna Rao,
   Superintendent,
   Government Soap Factory.

10. Mr. V. Venkatachar, M.A., B.Com.,
    Assistant Director of Industries and Commerce (*Secretary*).

Thrice

The Sub-Committee met three times on 17th January, 2nd February and 17th February 1940 and considered the subject under the following heads :—

(i) Approximate quantities of chemicals, drugs, medicines and essential oils in demand in the State.

(ii) the extent to which these are met by local manufactures and extent of imports.

(iii) investigation into the possibilities of growing basic raw materials of vegetable origin in large farms specially started for the purpose by the Agricultural and Forest Departments and if possible, by the Industrial and Testing Laboratory also,

(iv) investigation regarding the manufacture of chemicals, drugs and essential oils making use of the sources and facilities available locally,

(v) staff required for purposes of research, and

(vi) co-operation of certain departments with a view to co-ordinating results.

Chemicals, drugs and medicines in demand in Bangalore.

The Sub-Committee has, after enquiry and careful consideration, prepared a list, copy, appended, showing the estimated quantities of chemicals, drugs, medicines and essential oils consumed annually in Bangalore city including C & M Station. It will be seen from the list that roughly about 118,800 lbs of Tinctures, 39,700 lbs. of vegetable extracts, 49,000 lbs. of various Acids, 14,500 lbs. of spirits, 117,900 lbs of several compounds, salts, etc., 50,000 tubes of salvarsan, 7,600 oz. and 23,000 ampoules of complex substances, about 76,800 lbs. of essential oils and 70,400 lbs. of miscellaneous chemicals, drugs, etc. are consumed annually in Mysore. Their estimated value is roughly Rs. 25,00,000.

(ii) Extent of local manufacture and importes.

The question of the manufacture of chemicals, drugs and medicines, has been engaging the attention of the Government for several years past. This subject was first considered a few years ago as a result of which the Industrial and Testing Laboratory was brought into being. This Laboratory has been able to meet the demands of the local Medical Department in respect of chemicals and drugs to the extent of about 50 per cent. The Sub-Committee is of the opinion that there is scope to increase production in the Industrial and Testing Laboratory and to this end, it is desirable that the strength of the Technical Staff should be increased so that increasing and continuous attention may be paid to research work of medical importance as also to improve manufacturing efficiency by availing of the results of research and by utilising local resources of raw materials to a large extent.

The question of growing the basic raw materials required for the industry was considered by a small Sub-Committee (of the main Sub-Committee) comprising the following members :—

(iii) Investigation into the possibilities of growing basic raw materials of vegetable origin on large Farms.

1. Dr. B. T. Narayan,
2. Dr. L. S. Doraswamy,
3. Mr. B. Sanjeeva Rao,
4. Dr. M. N. Ramaswami.

This body, after careful consideration, has submitted a note on the subject The Sub-Committee, after reviewing it, recommends as follows :

It is desirable that action should be taken immediately to grow the following on a large scale to render supplies easy and adequate for manufacturing purposes as these are easily available and could be grown abundantly :

1. Capsicum.
2. Lobella.
3. Ginger.
4. Liquorice.
5. Senna.
6. Patchouli.
7. Khus Khush or Vetiver, and
8. Geranium.

GOVERNMENT ELECTRIC FACTORY

PHONE : 2046
TELEGRAMS: "GEF" BANGALORE.
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.
16th. July 1940.
Ref. C- 942

The Secretary,
Board of Industries & Commerce,
-B A N G A L O R E.

GOVT ELECTRIC FACTORY. No. 131 Date 18-7-40 BANGALORE

Dear Sir,

It is proposed to conduct the Plastics Sub-Committee Meeting on Monday the 22nd. instant between 9 and 10 a.m. at the Government Electric Factory premises. Please let me know whether the date, time and place are convenient to you.

Thanking you.

Yours faithfully.
Government Electric Factory.

Rao Rao 16/7

General Manager.

Replied on 18/7 that I will not be able to attend. HK.

16/7

Copies to:-

1. V. Paul, Esq.,M.Sc., M.I.S.W.
2. Mahommed Ahmed, Esq., -do-
3. M. Srinivasiah, Esq.,B.A.,I.I.Sc.,Bangalore.

} through the General Manager, M.I.S.W

No. 21/40-1.

Forwarded, with Compliments, to K. Panchasanathi Esq BA, Director for Small and Industrial Co-operation and Secretary Research Board for disposal.

18/7

18/7

K. Parthasarathi, Esq.,B.A.,
XXXXXXXXXXXXXXXXXXXXXXXXX

31/40-41

18th July 40

Dear Mr. Rama Rao,

Meeting of the Plastics Sub Committee
proposed to be held on
2nd July 1940.

Your letter No. G. 942 dated dated 16th July 1940 on the above subject has been forwarded to me by the Secretary, Board of Industries and Commerce, Bangalore, for disposal.

I regret I will not be able to attend the meeting on 2nd July 1940, on account of heavy work.

Yours sincerely,

K

V. Rama Rao, Esq. B.E., B.Sc.,
General Manager, Government
Electtic Factory, Mysore Road,

TELEGRAMS: 'G.E.F.'

TELEPHONE: 2046

V. RAMA RAO, ESQ., B.Sc.
General Manager,

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

D.O. No. 3905

Bangalore, 3rd September 1940.

Dear Mr. Parthasarathi,

I am herewith enclosing a copy of the Proceedings of the Sub-Committee of Plastics, held on 22nd July '40 for your information.

Kindly acknowledge receipt of the enclosures.

C.42/4.9.40
Acc 15
B.S. file
4.9.40

Yours sincerely,

K. Parthasarathi, Esq., B.A.,
Director,
Sandalwood Oil Factory,
M y s o r e.

KRI.

Encl:- A copy of the Proceedings
of the Plastics Sub-Committee.

3rd. September '40.

PROCEEDINGS OF THE SUB COMMITTEE OF
THE TICS HELD ON THE 22ND JULY 1940
AT GOVERNMENT ELECTRIC FACTORY, BANGALORE.

Present.

Messrs.

1. M. Krishnayya, Esq., B.A., F.I.I.C., Indian Institute of Science, Bangalore.
2. V. Paul, Esq., A.C., Chemists, Mysore Iron & Steel Works, Bhadravati.
3. Mohamed Ali, Esq., A.C.
4. V. Raja Rao, Esq., A.C., General Manager, Govt. Electric Factory, Bangalore.

Messrs. V. Paul and Mohamed Ali gave an account of the work they had carried out since the last meeting of the Ticatics Sub Committee held at Bhadravati. They informed the Committee that all the equipment for the manufacture of Moulding Powders had been received and that the work would commence immediately after the erection of the shed at Bhadravati which they stated might take about three months.

The Committee was of opinion that in view of the increasing demand of the Moulding Powders by the Government Electric Factory and in view of the uncertain supplies from Abroad, the construction of the shed and the manufacture of moulding powders may be speeded up as much as possible. In this connection, it was Resolved that the Chairman, Mysore Iron & Steel Works, Bhadravati should be requested to take necessary steps with a view to speed up the production of Moulding Powders.

Contd.

The Phenol and Cresol Grade Powders manufactured at Bhadravati by Mr. Paul was tried and four pieces of Ink Pot lids moulded. It was found that the material was good but required more curing time than the raw imported powder and also the temperature of moulding was 80° to 90°C higher. This by itself is not a serious defect and Mr. Paul said that the condition could be controlled and easily changed to conform to the conditions now adopted at the Government Electric Factory.

Mr. Paul informed the Committee that a Calcutta Firm of dealers could supply a very good quality of Cresol. He was requested to get into touch with this Firm and ascertain their production capacity. The Government Electric Factory was consuming nearly two tons of Cresol Powder every month and it was computed that for providing this quality of powder and for other needs 18 tons of Formal-de-hyde would be required per annum.

Mr. Mohamed Ali informed that the Formal-de-hyde Plant at Kirloskarwadi was capable of producing 4 tons of Formal-dehyde every month against our requirement of an average of 1 1/2 tons for the first year of our programme. The Committee agreed that the Plant at Kirloskarwadi may be bought with advantage, if the cost is not prohibitive, keeping in view the extensions and it was decided that the Chairman, Mysore

Contd.

Iron & Steel Works who has been negotiating for this machinery may be requested to get into some arrangement with Messrs. Kirloskar Bros., so that the plant in their place may be utilised for the manufacture of Formal-de-hyde immediately.

Mr. Paul was requested to make sufficient quantity of powder in the course of a fortnight and make it available to the Government Electric Factory to carry out the necessary tests. A dozen sample soap boxes are to be moulded out of this powder and tested for absorption of moisture, bleeding of colour etc. One sample will be sent to each member of the Committee to carry out the necessary tests and the data so collected will be co-related to improve the quality of the powder.

The usual plain colours demanded by the market was next shown to Mr. Paul and he was of the opinion that most of these could be manufactured excepting some very light shades. Samples of ink pot lids out of this powder were prepared at Bhadravati, ~~and~~ Mandya and sent to 1) Chairman, Mysore Iron & Steel Works, Bhadravati through the Chemists, 2) the Government Director, Industrial Concerns and 3) Chairman, Industrial Research Bureau.

Samples of pin trays moulded by Mr. Mohamed Ali using groundnut cake was next taken up and it was found that the samples when exposed to weather absorbed moisture to an extent of 1.8% and as such they were not found suitable for the manufacture of Electrical and other bakelite articles of daily

Contd.

necessity which come into contact with water. Mr. Mohamed Ali wanted that Bobins bobbins from this powder may be made and used in the Silk Industry in place of the wooden ones. The Government Electric Factory undertook to mould about a dozen of these bobins if the mould is available and send them on to the Silk Factory for necessary test.

Mr. M. Sreenivasaya wanted that the groundnut cake which has been used in this instance might safely be replaced with non edible oil cakes as the price of ground nut cake is bound to rise ~~in price~~ because of its use in the Biscuit Manufacturing Industry and as a cattle-feed.

Mr. V. Rama Rao asked the Committee if they could undertake to do some experiments to manufacture the kind of powder required for Injection Moulding, (Thermo-hardening.) The variety of articles that could be moulded out of this sort of powder was enormous and fetched a better price than the articles manufactured out of Bakelite Powder.

As the Mysore Iron & Steel Works are putting up a plant for the manufacture of Acetic Acid, Messrs. Mohamed Ali and Paul were of the opinion that they would ~~allow~~ kindly the manufacture of this type of powders. Taking it for granted that the Acetic Acid would be available at Bhadravati, they had to proceed with the experiment of collecting the data regarding the manufacturing process , Pilot

Contd.

Plant etc., required for this. The Chemists at Bhadravati were requested to draw up a scheme for these and get the necessary funds through the Chairman, Mysore Iron & Steel Works, Bhadravati.

An extract of the D.O. letter received from the Government Director, Industrial Concerns, Bangalore, by Mr. V. Rama Rao was read out as follows:

> "I hope that at the meeting to be convened on the 22nd. instant, the consideration of the question of experimenting with and collecting the data about the several kinds of Resins which might be suitable after some modification, for replacing bakelite, would be taken up.

Mr. M. Sreenivasaya enlightened the Committee that such work was entrusted to one Dr. Goswamy by the Government of India and that he was investigating the possibility of utilising the available vegitable oils for the manufacture of moulding powders. So far as Resins were concerned, the field has not been systematically tackled.

Mr. V. Rama Rao informed the Committee that some moulding powders from Ranchi got by Mr. Ranga Rao of the Mysore Govt. Lac & Paint Works would be moulded at the Government Electric Factory and results intimated.

Mr. M. Sreenivasaya said that they were using quite a good bit of Urea in that composition

Contd.

and Mr. Sreenivasaya was of the opinion that this type of powder would not pay at the present time when Urea itself was costing nearly Rs.1/- per lb and not readily available. If powders from Ranchi are found to be all right, Mr. Sreenivasaya said that it was easy to prepare the laboratory batches of powder and if necessary a pilot plant could be set to make these powders here alone. He said that at present he had no assistants to carry out any lack work as he was entrusted with other manufacturing problems at the Institute by the Government of India and that he promised to direct the research of lac to one of the students provided the Government of Mysore gave him a student. He thought that it was highly advisable to maintain a scholar at the Institute not only to explore the possibility of utilising the resins for the manufacture of Moulding Powders but also to solve the day to day problems which arise at the Government Electric Factory in connection with the bakelite and other sections using insulating materials.

*****

Bangalore.
11.9.40.

Convenor,
PLASTICS Sub Committee.

C.42.

4th September /40.

Dear [illegible]

Ref.:- Your D.O. letter [illegible]/5.9.40.

I have just received through a copy of the Proceedings of the meeting of the Sub-Committee of Plastics held on 22nd July 1940. Unfortunately, the Proceedings arrived a day too late for me to place before the Council Meeting.

Yours sincerely,

[signature]

MM
4/9

[illegible], Esq., C.B.,
General [illegible], Government
Electric Factory, Ely Grove,
Nonsuch.

GOVERNMENT ELECTRIC FACTORY

TELE { GRAM "GEF" BANGALORE. PHONE 2046 GENERAL MANAGER 2651 OFFICE CODE: A.B.C. 6TH EDITION.

MYSORE ROAD. BANGALORE CITY.

4th. September '40,

Ref. G-1

Messrs.
1. M. Sreenivasaya, Esq., B.A., etc.,
2. V. Paul Esq., B.Sc.,
3. Mohomed Ali, Esq., B.Sc.,

Dear Sir,

I enclose herewith a copy of the Proceedings of the Sub-Committee of Plastics held on the 22nd. July 1940 at the Govt. Electric Factory.

Please acknowledge receipt of the enclosure.

Yours faithfully,
Government Electric Factory.

Sd.

HSK. General Manager.

Encl: One.

No. 1009 Copy of the above is forwarded with compliments to the Secretary, Board of Industries & Commerce, Bangalore, for information together with a copy of the Proceedings.

Rama Rao
General Manager.

HSK.

Encl: One.

No 46/40-1

Forwarded, with compliments, to K Parthasarathi Esq BA, Director, Govt Sanskrit Oriental Institute and Secretary, Sanskrit Research Board for favour of disposal

6.9.60
Secretary,
Board of Sp C.

Bd File
6/9
6/9/60

11th Septr. 1940.

Proceedings of the Plastics Sub Committee meeting held on the 22nd July 1940.

Submitted.

A copy of the proceedings of the meeting of the Plastics Sub Committee is submitted herewith for favour of perusal.

Director,
Sandalwood Oil Factory.

First Member of Council)

CONFIDENTIAL.

INDUSTRIAL RESEARCH BOARD.

Proceedings of the First Meeting of the newly constituted Industrial Research Board Sub-Committee held on Tuesday the 3rd September 1940, at 1 P.M. at the Chambers of the First Member of Council.

PRESENT.

Rajamantrapravina N. Madhava Rau, Esq., B.A., B.L.,
First Member of Council (*Chairman*).

Members.

1. Mr. M. Venkatanaranappa, B.A.,
Chairman, Mysore Iron and Steel Works, etc.,
Bhadravati.
2. Mr. B. G. Appadorai Mudaliar, B.A., B.Sc., A.M.I., M.E.,
Director of Industries and Commerce in Mysore,
Bangalore.
3. Mr. K. Parthasarathi, B.A.,
Ag. Director, Sandalwood Oil Factory,
Mysore.
4. Mr. E. V. Ganapathi Iyer, B.Sc.,
Government Director, Industrial Concerns,
Bangalore.

Mr. K. Parthasarathi, B.A.,
Ag. Director, Sandalwood Oil Factory,
Mysore (*Secretary*).

Mr. C. E. Noronha, M.A., Secretary to Government, Development Department, Dr. K. R. Krishnaswami, B.A., D.Sc. (Lond.), F.I.C., Indian Institute of Science, and Mr. B. Rama Rao, M.A., D.I.C., Director of Geology, were also present by request.

GENERAL.

Opening the proceedings of the regular meeting, the Chairman referred to the agenda circulated to the members and said that the review of work done by the several sub-committees constituted by the Research Bureau Sub-Committee on 7th November 1939 may be taken up for consideration.

(1) *Manufacture of Super-phosphates.*—The progress of work done by this Committee was read out.

Present Personnel.

1. Dr. J. C. Ghosh, D.Sc., F.N.I.,
Director, Indian Institute of Science (*Convenor*).
2. Mr. S. G. Sastry, B.A., M.Sc. (Lond.), F.C.S.,
Director, Sandalwood Oil Factory.
3. Dr. K. R. Krishnaswamy, B.A., D.Sc. (Lond.), F.I.C.,
Indian Institute of Science.
4. Mr. E. V. Ganapathi Iyer, B.Sc.,
Government Director, Industrial Concerns (new member from 4th September 1940).

Dr. Krishnaswamy explained the details of the experiments conducted by him in respect of phosphatic nodules of Trichinopoly. The suggestion of the Committee to depute an officer of the Geological Department was also considered. The Chairman observed whether it was necessary to depute an officer, when other raw materials are locally available for the manufacture of super-phosphates.

Mr. E. V. Ganapathi Iyer stated that Messrs. Parry & Co., Madras, are manufacturing super-phosphates out of bones collected from various parts of South India and making large profits. He said that some experiments are being conducted in the Mysore Chemicals and Fertilisers, Ltd., Belagula, and he would be suggesting independently to Government to start a fertiliser industry. The Chairman remarked that the very idea of starting the Mysore Chemicals and Fertilisers, Limited, was to develop a fertiliser industry in the State and there was no necessity to have a separate factory to manufacture fertilisers. Dr. Krishnaswamy explained to the house that the manufacture of super-phosphates from bones is a simple proposition and could be advantageously pursued.

The Chairman desired to know if statistical information with regard to the availability of bones in the State could be had from the Market Survey reports of the Department of Industries and Commerce. The Director of Industries and Commerce stated that plenty of bones were available in the State, particularly in the Malnad area, and promised to furnish complete information to the Board at its next meeting.

It was resolved that the sub-committee should investigate the position as regards raw materials, the availability of market, equipment necessary with working costs, etc. .

The Chairman suggested that Mr. E. V. Ganapathi Iyer, Government Director, Industrial Concerns, may also serve as a member on this sub-committee.

(2) *Manufacture of Hydrated Lime.*—

Present Personnel.

1. Mr. B. Rama Rao, M.A., D.I.C.,
   Director of Geology (*Convenor*).
2. Dr. H. S. Sharma, Ph.D. (Lond.), D.I.C. (Lond.),
   Chemist, The Mysore Paper Mills, Ltd.,
   Bhadravati.
3. Mr. Balakrishna, B.A.,
   Mysore Iron and Steel Works,
   Bhadravati.
4. Mr. G. Gundu Rao, M.Sc., A.I.I.Sc.,
   The Mysore Sugar Co., Ltd., Mandya.

The Chairman remarked that further experiments should be continued at Bhadravati and also at the Porcelain Factory, and this subject may be omitted from the list.

(3) *Manufacture of Ferro-Manganese, Ferro-Silicon, etc.*—The Chairman, Mysore Iron and Steel Works, explained that the scheme for the installation of 1·500 K. V. A., electric furnace for the manufacture of Ferro-alloys had since been sanctioned by Government and that further work was in progress. Since this question had reached a stage when no further advice was necessary, the Chairman observed that further consideration of this subject might be dropped.

(4) *Magnesite Bricks.*—The Chairman, Mysore Iron and Steel Works, stated that the Indian raw material was stated to be unsuitable for the manufacture of magnesite bricks and that the Works, at present, imported these bricks from Japan, and they were giving satisfactory results. Dr. Krishnaswamy stated that as the Indian material being far too pure, the results may not be satisfactory and suggested that further expriments might be conducted at the Porcelain Factory, when the tunnel kiln was ready.

(5) *Grinding Bodies for the Cement Plant.*—The Chairman, Mysore Iron and Steel Works, explained in detail the experiments conducted at the Works.

The Committee opined that it would not be possible to manufacture these at economical rates.

It was resolved to delete this subject.

(6) *Manufacture of Caustic Soda.*—

Present Personnel.

1. Mr. E. V. Ganapathi Iyer, B.Sc.,
   Government Director, Industrial Concerns (*Convenor*).
2. Mr. S. G. Sastry, B.A., M.Sc., (Lond),
   Director, Sandalwood Oil Factory.
3. Mr. B. K. Ramprasad, M.A. (Hon.), D.Sc., M.I.E. (Ind.),
   Government Electrical Department.
4. Dr. K. R. Krishnaswamy, B.A., D.Sc. (Lond.), F.I.C.,
   Indian Institute of Science.
5. Mr. B. Rama Rao, M.A., D.I.C.,
   Director of Geology (new member from 4th September 1940).

The Government Director, Industrial Concerns, pointed out that the Sub-Committe had already sent its recommendation to manufacture this chemical.

The Director of Sandalwood Oil Factory read out the recommendation referred to by the Government Director, Industrial Concerns. The Government Director, Industrial Concerns, explained the implications involved and stated that as there were no manufacturers in South India and as there was a ready market, the chemicals could be readily sold.

There was a general discussion about the Lime-stone deposits in which the Director of Geology and Dr. Krishnaswamy actively participated. It was pointed out that the demand for soda-ash and also chlorine obtained as a bye-product in the manufacture of Caustic-soda and the possibilities of utilising chlorine in the manufacture of super-bleach and bleaching powder should be examined.

It was resolved that the Sub-Committee be requested to carefully re-examine the visible market for the chemicals and other bye-products, plant and equipment required, with capital and running costs involved, etc., and to favour the Board with a comprehensive report.

The Chairman said that Mr. B. Rama Rao, Director of Geology, might also serve on this Committee.

(7) *Manufature of Glauber Salt.*—The quantity of Glauber Salt available as a bye-product in the manufacture of Sodium-bichromate being very small, it was decided that the question might be dropped from further consideration. It was, however, considered that the manufacture of Sodium Sulphite should be kept in view in connection with the scheme for the manufacture of Acetic-acid.

(8) *Manufacture of Alum.*—

Present Personnel.

1. Mr. B. Rama Rao, M.A., D.I.C.,
   Director of Geology (*Convenor*).
2. The Director of Public Health.
3. Mr. S. G. Sastry, B.A. M.Sc. (Lond.),
   Director of Sandalwood Oil Factory.
4. Dr. B. K. Ramprasad, M.A. (Hons.), D.Sc., M.I.E. (Ind.),
   Government Electrical Department.
5. Mr. N. K. Seshadri Iyengar, B.A. M.Sc.,
   The Mysore Paper Mills, Ltd.

In view of the fact that the Mysore Chemical Manufactures, Ltd., had interested themselves in the manufacture of alum, and as, so far as the Board were

aware, no special problems were involved, it was decided that this subject might be deleted from the list.

(9) *Manufacture of Carbon Electrodes.*—

1. Dr. B. K. Ramprasad, M.A. (Hons.), D.Sc., M.I.E. (Ind.) (*Convenor*).
2. Mr. D. V. Krishna Rao, B.A.,
   Mysore Iron and Steel Works.
3. One Chemist from the Mysore Paper Mills, Ltd., and
4. One from the Indian Institute of Science.

The progress of work done by this Committee was noted with satisfaction. Dr. Krishnaswamy said that at the Indian Institute of Science, experiments were being conducted at the instance of Government of India. The Chairman, Mysore Iron and Steel Works, pointed out that the experiments were being continued in the Iron Works as well.

It was resolved to request the Sub-Committee to get the results of experiments and to go into further details and to furnish a report to the Board as early as possible.

(10) *Manufacture of Soaps required by the Textile Mills.*—The Government Director, Industrial Concerns, explained that textile soap of good quality was being manufactured and supplied by the Government Soap Factory. It was decided to delete this subject.

(11) *Manufacture of Plastics.*—

Present Personnel.

1. Mr. V. Paul,
   Indian Institute of Science.
2. Mr. Ahmedali,
   Chemist, Indian Institute of Science.
3. Mr. M. Srinivasaiya, B.A., F.I.I.Sc.,
   Indian Institute of Science.
4. Mr. V. Rama Rao, B.Sc.,
   Government Electric Factory.

After reviewing the work of the Committee, the Chairman pointed out that the Government of India was also interested in this proposition. The Chairman, Iron and Steel Works, suggested that as the Pilot Plant is being erected at Bhadravati, he could try to manufacture formaldehyde there.

The Chairman showed to the Members two sets of samples of Bakelite product—one set made out of local powder prepared at Bhadravati, and the other with imported powder. The samples from the local powder were found to be as good as those from the imported one.

Dr. Krishnaswamy said that Dr. J. C. Ghosh, Director, Indian Institute of Science, had full information about Bakelite powder and plastics in general.

It was decided that the Sub-Committee should be requested to pursue the investigation further and also to consider the commercial aspect of the proposition.

(12) *Manufacture of Copper-wire, Galvanised Pins, etc.*—Since regular work had commenced at the Electric Factory, it was decided to delete the subject.

(13) *Manufacture of Tube Glass.*—The Chairman observed that this subject might be deleted as it was receiving the attention of Messrs. The Mysore Glass and Enamel Works, who anticipated no serious technical difficulties.

(14) *Manufacture of Chemicals, Drugs and Essential Oils.*—

Present Personnel.

1. *Sastravaidyapravina* Dr. S. Subba Rao, B.A., M.B.C.M., L.R.C.P. (Lond.), M.R.C.S. (Eng.), D.P.H., Retired Senior Surgeon. (*Convenor.*)
2. Dr. B. T. Narayan, B.A., Ph.D., D.Sc., Bio-Chemist, Department of Agriculture.

3. Mr. B. H. Krishna, M.Sc., A.I.C., Industrial and Testing Laboratory.
4. Dr. B. L. Manjunath, B.A., D.Phil., M.Sc., Professor of Organic Chemistry, Central College, Bangalore.
5. Dr. P. C. Guha, D.Sc. (Cal.), the Indian Institute of Science.
6. Dr. L. S. Doraswami, M.Sc. (Lond.), Ph.D., Economic Botanist.
7. Mr. M. S. Krishna Rao, Superintendent, Government Soap Factory.
8. Dr. M. N. Ramaswamy, M.Sc., D.Sc., Forest Research Chemist, Forest Research Laboratory.
9. Mr. B. Sanjeeva Rao, B.A., M.Sc. (Mad.), F.I.I.Sc., the Indian Institute of Science.

The Government Director, Industrial Concerns, pointed out that due to War, the cost of essential oils had gone up considerably and the imports had fallen off considerably. It was unanimously agreed that for such of the essential oils for the distillation of which raw materials are locally available, immediate steps should be taken to manufacture them after ascertaining the demand and commercial possibilities. The Board was of opinion that the cultivation of important herbs should be pursued. The Chairman pointed out that the cultivation of cinchona was being extended in the Kadur District. The Director, Sandalwood Oil Factory, suggested that geranium might be grown in the premises of the Sandalwood Oil Factory, as the sample oil distilled from the geranium grown experimentally in the Soap Factory compound was very good and better than the imported material and that the plants could be easily grown and there was a potential market in India for the oil at remunerative prices.

The Chairman finally observed that immediate attempts should be made to encourage private persons to grow geranium and the question of distillation taken up by the Sandalwood Oil Factory.

(15) *Manufacture of Cement Asbestos.*—

Present Personnel.

1. The Director of Geology in Mysore (*Convenor*).
2. Mr. S. G. Sastry, B.A., M.Sc. (Lond.), Director of Sandalwood Oil Factory
3. Mr. M. K. Narasimhan, B.A., Cement Factory, Bhadravati.

After reviewing the work done, the Chairman observed that this question might be dropped.

The question of disposing of the stock of asbestos in the Sandalwood Oil Factory, Mysore, was brought up by the Director of Sandalwood Oil Factory.

The Director of Industries and Commerce said that the existing stock (in the Sandalwood Oil Factory, and with the Director of Geology) might be converted into boiler composition—a simple industry—and at a later stage handed over to private enterprise. The Director, Sandal Oil Factory, said that about 50 tons were available in Mysore. The Director of Industries and Commerce promised to furnish very early the local demand for boiler composition.

(16) *Manufacture of Potassium Permanganate.*—The Director of Geology said that the work was in progress and that final report from the chemist on this special work was awaited.

(17) *Manufacture of Abrasive materials such as Corundum Wheels, Sand Paper, etc.*—It was decided to delete this subject.

(18) *Production of Cinchona.*—It was resolved that the report from Dr. M. N. Ramaswamy be placed before the Committee.

(19) *Manufacture of Water-proof fabrics.*—The Chairman observed that this subject might be left to the Textile mills.

(20) *Mixture of Petrol and Power Alcohol.*—This subject was also decided to be deleted.

(21) *Testing of Textile Samples.*—This subject was also decided to be deleted.

(22) *Sulphur.*—The Director of Geology was requested to expedite the work in connection with the location of sulphur in the State.

(23) *Manufacture of Copper-sulphate.*—Since the Mysore Chemical Manufactures, Ltd., have already been manufacturing this chemical in their works at Turbanahalli, it was resolved to delete this subject.

(24) *Manufacture of Sodium-bichromate.*—The Chairman wanted to know the progress with regard to the construction of buildings and the erection of plant.

The Government Director, Industrial Concerns, and Dr. Krishnaswamy explained the position and said that the work was progressing expeditiously.

II. The next subject considered was Dr. A. V. Varadaraja Iyengar's proposition with regard to the utilization of molasses for the production of potassium salts.

The scheme of Dr. Varadaraja Iyengar was examined. Dr. Krishnaswamy suggested that the question of Tartaric-acid manufacture could conveniently be taken up later, after investigating the availability of green tamarind and that in the meantime, the recovery of potash-salts from molasses might be taken up immediately. The Director of Sandalwood Oil Factory read out the discussion he had with Sir M. O. Forster regarding the advisability of taking up this scheme Dr. Krishnaswamy further suggested that a sub-committee might be appointed to go into this subject and advise the Board.

The Chairman desired to know the working costs involved with full details.

It was finally decided to request Dr. Varadaraja Iyengar to furnish details with regard to cost, etc., to handle ten tons of molasses as an experimental measure, in the proposed Pilot plant, to be placed before the Committee at its next meeting.

III. The starting of a Glue Factory was the last proposition discussed. After a preliminary discussion, the Director of Industries and Commerce was requested to complete the necessary inquiries and get complete statistical information for being placed before the House at its next meeting.

It was the opinion of the House that this was a proposition in which the Mysore Tanneries, Ltd., should interest themselves.

The Chairman thanked the members and the meeting terminated.

K. PARTHASARATHI,
Secretary.

N. MADHAVA RAU,
Chairman.

WD 786—GPB—100—21-11-40

Industrial Research Board.

& Secretary,
Industrial Research Board.

130 /40-41.

10th December 40

Dear Mr.Rama Rau,

Subject: Plastics and Moulding powder.

I write to inform you that in the last meeting of this Board it was decided that the Sub-Committee should be requested to pursue the investigations further and also to consider the commercial aspect of the proposition.

The Board further desire that the sub-committee should get into touch with Dr.J.C. Ghosh, Director, Indian Institute of Science, who it is understood, is in full possession of information about Bakelite - powder and plastics in general.

The Chairman, Mysore Iron and Steel Works suggested that as the pilot plant is being erected at Bhadravati, he could try to manufacture Formaldehyde there. The sub-committee may also get into touch with the Chairman, Mysore Iron and Steel Works.

Please take immediate action on all the above and forward a detailed report very early for consideration by the Board at its next meeting.

Yours sincerely,

V. Rama Rau,Esq.,B.Sc.,
Convenor, Plastics Sub-Committee,
Government Electric Factory,
B a n g a l o r e.

HSR)

VR. / Dated 27-12-40.
Enquired further Progress of

Immediate

Tele.—"INDUSCOM."

DEPARTMENT OF INDUSTRIES AND COMMERCE.

Mr.B.G.A.Mudaliar,B.A.,B.Sc.,A.M.I.Mech.E.,

Director.

OFFICE OF THE DIRECTOR,

Bangalore, dated the 7th Dec.1940.

D. O. No. A1. 388/40-41.

Dear Mr.Parthasarthy,

I shall be thankful if you will kindly let me have a note in the course of the day regarding the results of shellac moulding powder experiments conducted at the Electric Factory and its commercial prospects as this note is required in connection with the Twelfth Industries Conference which I am attending at Lucknow.

Yours sincerely,

B.G.A.Mudaliar

K.Parthasarthy,Esq.,B.A.,
General Manager,
Govt.Electric Factory,
Bangalore.

MEMO

GOVERNMENT ELECTRIC FACTORY

MYSORE ROAD. BANGALORE CITY.

Section..... Date.....

Moulding powder made out of
A small quantity of Shellac at the Bio was analysed here.
Chemistry dept by Mr Srinivasiah.
The moulings were not up to the mark as the Expts have
two powder gave a porous articles. ~~No expts~~
~~have been conducted as the factory~~ been stopped
as the factory as the case is being to be
I
locked at Ranchi No experiments on
powders manufactured at Ranchi have been
conducted as powder was not available.

Ray

D.O 140/40-1

11th December 40

Dear Mr.Appadorai Mudaliar,

Your D.O.letter No.A.388/40-41,was delivered to me very late on 7th December 1940, to enable me to reply on the very same day. On enquiry, I learnt that you had left Bangalore for Lucknow, the very next day.

With regard to the information you have asked for, I write to inform you,that only a very small quantity of moulding powder, out of shellac, prepared at the Bio-Chemistry Department of the Indian Institute of Science, by Mr. Sreenivasiah, was moulded at the Electric Factory, about two years back. The mouldings did not come up to the mark and moulded articles were very porous.

Experiments were stopped at the Electric Factory, as the question of preparing moulding powders,out of shellac, was being tackled at Ranchi.

Yours sincerely,

B.G.Appadorai Mudaliar,Esq.,B.A.,B.Sc.,
A.M.I.Mech.E.,
Director of Industries & Commerce, Mys.Govt.
C/o. Carlton Hotel, L U C K N O W.
CDR.

Government of Mysore.

Industrial Research Board.

No. 141 /40-41

Office of the Secretary,
Mysore Road,
Bangalore, Dated, 12th December 1940.

From

K.Parthasarathi, Esq., B.A.,
Secretary, Industrial Research Board,
Bangalore.

To

M. Venkatanarayanappa, Esq., B.A.,
Chairman, Mysore Iron and Steel Works,
Bhadravati.

Sir,

Subject: Formal-de-hyde -- Manufacture of.

I am directed to forward a copy of the report of the Drugs, Essential Oils, and Chemicals Sub-Committee. This Sub-Committee have recommended that the production of Formal-de-hyde on a commercial scale should be taken up immediately, since there is an assured demand and facilities available

I am to state that during the last meeting of the Board, you had suggested that as the pilot plant is being erected at Bhadravati, you could try to manufacture this chemical there. The Plastics Sub-Committee has also been requested to get into touch with you in this matter.

I am desired to request you to be so good as to take very early action on the above and to favour the Board with a report about the possibility of taking up the manufacture of Formal-de-hyde on a commercial scale.

I have the honor to be,
Sir,
Your most obedient servant,

sd.K. Parthasarathi.

Secretary,
Industrial Research Board.

No. 142 /40-41 Dated, 12th Decr.40.

Copy of the above is forwarded with compliments to Mr.V. Rama Rau, B.Sc., Convenor, Plastics Sub-Committee, Government Electric Factory, for information, in continuation of D.O.letter No. 136/Neo-1 dated 10-12-40 for further action.

Secretary,
Industrial Research Board.

Mr. M. VENKATANARANAPPA, B.A.,
CHAIRMAN,
Mysore Iron & Steel Works, etc.

BHADRAVATI,

465
No. ~~458~~

Camp: Bangalore,
19th December 1940.

K. Parthasarathi, Esq, B.A.,
Secretary, Industrial Research Board,
Government Electric Factory, Mysore Road,
Bangalore City.

Dear Sir,

Manufacture of Formaldehyde.

With reference to your letter No.141/40-41 dated the 12th December 1940, I write to state that a second hand formaldehyde plant has been purchased from Messrs. Industrial Chemical Works, Kirloskarvadi, and it is understood that this is under despatch. After it is erected, it is proposed to manufacture about 5 tons per month of 40% solution of formaldehyde.

In the meanwhile, I shall thank you to let me know the present demand for this product in this country and the prospective buyers. It is proposed to use part of the output from this plant for the manufacture of synthetic resins at Bhadravati, for which a Pilot Plant has just been put up.

Yours faithfully,

Chairman.

INDUSTRIAL RESEARCH BOARD
42/40-41
28/12/40.
BANGALORE.

No 222/40-1 Acknowledged
1) Ack.
2) Submit this to Chairman.
20/12.

ksr

D.O. 198/40-1

23rd Decr. 0

Dear Mr.Krishna,

Subject: Formaldehyde - Manufacture of.

With reference to the resolution of the Sub-Committee (Drugs,Chemicals, and Essential Oils) on the above subject, I request you to let me know the present demand for the above chemical in India, with details and prospective buyers.

Yours sincerely,

B.H. Krishna,Esq.,M.Sc.,A.I.C.,
Chief Chemist, Government
Industrial and Testing Laboratory,
Bangalore.

MYSORE ECONOMIC CONFERENCE.

BOARD OF INDUSTRIES AND COMMERCE.

Subject .....

File No. of 19 .

Formal-de-hyde is largely consumed, as far as my info goes, in textile mills.

1) Enquire local mills

2) Address Mill owners' Assn Bombay or Dr R Dhar Indian Chemical Soc

Draft letter.

Sh 6/1/41. Appd 8/1.

Issued 9/1/41

NOTE—Contn. Sheet.

WD 921—GPB—1,500—26-9-28

No. 285-3/41-1

9th Jany.

To
1) The Director of I & C Madras.
2) The Director of I & C Bombay.
3) The Director of Ir& C U.P & C.P.

xxxx Dear Sir,

Subject: Formaldehyde.

I request you kindly to intimate the potential demand for the above chemical in your Province/ Presidency. I also wish to know if the Textile Mills in the Province/ Presidency consume appreciable quantity of this Chemical.

I shall be obliged if you could furnish detailed information regarding demand, market rate, present source of supply etc.

The favour of an early compliance is requested.

Yours faithfully,

Secretary.

9/1/41

INDUSTRIAL RESEARCH BOARD.

No. 288-S /40-41 Bangalore, Dated, 9-1-1941.

From

K. PARTHASARATHI, ESQ., B.A.,
Secretary, Industrial Research
Board, Mysore Road, Bangalore.

To

1) Binny Mills, 2) Minerva Mills,
3) Mysore Mills, 3) Suryodya Mills,
5) S.K. Mills, Mysore,

Dear Sir,

Subject: Formaldehyde.

Please be good enough to intimate whether the above chemical is being consumed in your Mills and if so, the quantity required per annum, source of supply, rate of supply etc. may kindly be intimated.

The favour of an immediate reply is requested.

Yours faithfully

Secretary.

TELEGRAMS: "SRIKMILS," MYSORE.
TELEPHONE: MYSORE 266.

CODES:
"A.B.C. 5TH & 6TH EDITIONS"
"BENTLEYS" & "PRIVATE"

SRI KRISHNARAJENDRA MILLS, LTD.,

(REGISTERED IN MYSORE)

N. SIRUR & Co.
AGENTS
TELEGRAMS: CHAMUNDI
BOMBAY & BANGALORE
BOMBAY 22 84 34
TELEPHONE: BANGALORE 2010

In reply refer to 526

BANGALORE ROAD

MYSORE 11th January 1941

The Secretary,
Industrial Research Board,
Mysore Road, Bangalore.

Copied

Dear Sir,

Re: Formaldehyde.

With reference to your letter No.288-5/40-41 of the 9th instant, we write to inform you that we have been using the above material in our Mills and our annual consumption of same is about 100 lbs per annum. This material is being supplied by Messrs. Imperial Chemical Industries (India) Ltd., Madras, and our last purchase was during July 1940 at Rs.0-6-2 per lb. delivered at our Mill premises.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD
No. 114
Date 13/1/41
BANGALORE.

Yours faithfully,
A N Chakravarty
Secretary

13/1

Sekwilli Thanks

Acknowledged

GN 13/1

D.O. 326/Ceo-1
Immediate

20th January 1

Dear Mr. Krishna,

Subject: Formaldehyde.
Refce: My D.O. letter No.190/40-41
dated 23rd Decr.40.

I have yet to receive a reply on the above subject. Will you please expedite the information? When can I expect it.

Yours sincerely,

B.H. Krishna, Esq., M.Sc., A.I.C.,
Chief Chemist, Government
Industrial and Testing Laboratory,
Malleswaram. P.O.

Memorandum.

No. 557

N. SIRUR & Co., Ltd.,

TELEGRAMS:-"CHAMUNDI" AGENTS,
BOMBAY & BANGALORE
TELEPHONE No. 2010. BOMBAY

From
THE MANAGER
THE MYSORE SPG. & MFG., CO., LTD., BANGALORE.
(REGD. OFFICE.— 70, FORBES ST., FORT, BOMBAY)

To

Bangalore 16th Jany., 194 1

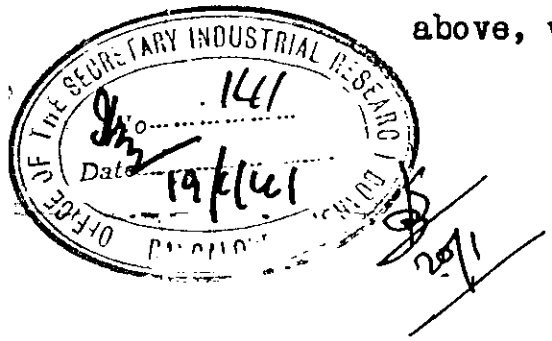
The Secretary,
Industrial Research Board, Mysore Rd.
Bangalore .

Dear Sir,

Re: FORMALDEHYDE.

With reference to your letter No.288-5 of the 9th instant, addressed to Minerva Mills and ourselves, regarding the above, we have given below the information required by you :-

Annual consumption of Formaldehyde :- 1-2 Cwts
Source of Supply : Chemdyes Ltd. (previously)
Rate of supply : approximately As.5/- a lb.



Yours faithfully,

NS Sirur

General Manager .

BLK.

31)

G. R., G. D., No. 1013, dated 19-12-21

Bombay 22nd Sept. 1941

The Director of Industries. Bombay,
No. 285-3/40
has the honour to acknowledge the receipt of your communication dated 6.9.41 which is receiving attention.

Please quote reference No. Cdem 31/ in all further correspondence with this office on the same subject.

SECRETARY INDUSTRIAL RESEARCH BUREAU GOVT. OF THE PRESIDENCY OF BOMBAY
Subject
No. 153
Date 22/9/41

Aldehyde

N. R. Deam.

22/9 for Director of Industries

O. H. M.

The Secretary

Industrial Research Board

Govt. of Mysore,

Bangalore

S.S.K.

Clerk.

Clerk,

Office of the Director of Industries,

Bombay

B. H. KRISHNA, M.Sc., A.I.C., A.I.I.Sc.
CHIEF CHEMIST

TELEGRAMS: "TESTLAB," BANGALORE
TELEPHONE NO.: 2024, CITY
GOVERNMENT INDUSTRIAL AND TESTING
LABORATORY, MALLESWARAM P.O.

BANGALORE, DATED 21st January 1941.
(S. INDIA)

D.O. 7/100

Dear Mr. Parthasarathi,

Sub:Formaldehyde.

In reply to your D.O.letter No. 326/40-1, dated 20th January, 1941, I beg to inform you that as this material is not separately classified in the Sea-borne trade returns the information I am passing on is an estimate based on the information obtained from personal enquiries conducted by me with a number of chemical merchants in Bombay who are distributing very large quantities of Formaldehyde to the textile and leather industries. I make out that the total quantity of Formaldehyde obtained in the form of a 40 per cent solution, consumed annually in India is of the order of about 400 to 500 tons (Formalin). This is exclusive of a much smaller quantity obtained in the form of Hexamine and Para Formaldehyde, used mainly in medicine. The quantity thus imported is estimated variously from 20 to 50 tons. Apart from this you are aware of a very large quantity of moulding powders of ~~the~~ Formaldehyde and Phenol, Urea or other chemicals are condensed.

I regret I was unable to furnish information early since I was on the look out for more difinite information from trade returns to confirm the figures estimated from various sources of information.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD, BANGALORE.
No. 157
Date 23/1/41

Yours sincerely,

K.Parthasarathi, Esq., B.A.,
Secretary,
Industrial Research Board,
BANGALORE.

349/40-1

23rd January 1

Urgent.

Dear Mr. Rama Rau,

It is understood that samples of bakelite powder manufactured at Bhadravati were tried at the Government Electric Factory, and samples mouldings were taken.

I shall be glad to have a note on these experiments, to be placed before the next meeting of the Board.

Thanking you,

Yours sincerely,

V. Rama Rau, Esq., B.Sc.,
Electrical Superintendent,
and Convenor, Plastics Sub-Committee, Government Electric Factory, Bangalore.

409/40-1

3rd February 1

M. Venkatanaranappa, Esq., B.A.,
Chairman, Mysore Iron and Steel Works,
Bangalore.

Subject: Manufacture of Formaldehyde.
Refce: Your letter No.465 dated 19th Decr.40.

With reference to the above, I am directed to inform you that this material is not separately classified in the Statistical returns. This chemical is mostly consumed in large quantities by the textile and leather industries. The Chief Chemist of the Industrial and Testing Laboratory reports that tha annual consumption of Formaldehyde 40% solution is estimated at about 400 to 500 tons. The local textile Mills purchase the chemical at Annas 5/- to 0-6-2 per lb. I am awaiting further detailed information from the Directors of Industries, Bombay and Madras.

I have the honor to be,
Sir,
Your most obedient servant,

Secretary.

Mr. S. G. Sastry, B.A., M.Sc.(Lond.),
Director.

GOVERNMENT OF MYSORE

ADDRESS FOR TELEGRAMS:
SANDAL
MYSORE
CODE USED: "BENTLEY'S"

SANDALWOOD OIL FACTORY,

Mysore, 8th February 1941.

No. 31/40-41.
Enc.

Dear Mr. Parthasarathi.

I enclose herewith copy of a letter which I have addressed to Mr. Venkatanaranappa on the subject of manufacture of furfural, which is self-explanatory. Please let me have a formal letter from you about my membership of the Sub. Committee on the subject of manufacture of plastics.

Yours sincerely,

Sastry

Submit a note to Chairman seeking approval for nomination of Mr S.G. Sastri as an additional Member of Plastics subcommittee.

9/2/41

10/2

K. Parthasarathi, Esq., B.A.,
Secretary, Industrial Research Board,
Government Electric Factory,
Mysore Road, Bangalore-City.

SGS:ATK)

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD. BANGALORE.
No. 212
Date 10/2/41

Letter acknowledged
10/2/41

Mr. S. G. Sastry, B.A., M.Sc. (Lond.),
Director.

GOVERNMENT OF MYSORE

ADDRESS FOR TELEGRAMS:
SANDAL
MYSORE
CODE USED: "BENTLEY'S"

SANDALWOOD OIL FACTORY,

Mysore, 8th February 1941.

No. 31/4041
Enc.

Dear Mr. Venkatanarannappa,

During the early part of January, I had gone to Calcutta and I had an occasion to meet Sir S.S. Bhatnagar at the Alipore Test House. He informed me that if somebody could manufacture Furfural in commercial quantities, there would be a big demand for it in the synthetic plastic industry. In fact, in one of his letters to me, he states that every ounce of furfural that can be manufactured could be sold in no time in India.

I thought I would try my hand at this and submitted the matter to the First Member of Council. He informed me that since work on the manufacture of synthetic plastics is going apace at Bhadravati and since a Pilot plant has already been ordered and also since Bhadravati is tackling the problem of the manufacture of formaldehyde, the Member stated that I might consult you and find out if you have the manufacture of furfural also in your programme, and if so, there will be no necessity for a duplication of work. If otherwise, he stated that the question of conducting experiments on the preparation of furfural in large quantities may be taken up for investigation at the Sandal Oil Factory. May I request you to kindly let me know the present position with regard to this matter?

The Member also stated that I might be made a member of the Sub.Committee on the subject of manufacture of plastics constituted by the Industrial Research Board.

Hoping to hear from you at an early date,

I remain,
Yours sincerely,

M. Venkatanarannappa, Esq., B.A.,
Chairman, Mysore Iron & Steel Works, etc.,
Office of the Mysore Paper Mills, Ltd.,
"Asiatic Buildings", Kempegowda Road,
BANGALORE CITY.

SGS:ATK)

442/1001

11th February 1

Dear Sir

Subject: Plastics Sub-Committee - Membership.

I am in receipt of your D.O. letter No.31/40-41 dated 8th February on the above subject. Many thanks. I shall again write to you in the matter very early.

Yours faithfully,

S.G. Sastry, Esq., B.A., M.Sc., (Lond),
Director of Sandalwood Oil Factory,
Mysore.

HSR)

463/40-1

19th Feby. 1

S.G. Sastry, Esq., B.A., M.Sc., (Lond),
Director of Sandalwood Oil Factory,
Mysore.

Subject: Plastics Sub-Committee.

Reference: This office D.O. Letter No.442/40-41 dated 11th February 1941.

I am directed to inform you that you have been coopted as an additional Member of the Plastics Sub-Committee.

Mr.V. Rama Rau, Electrical Superintendent, Government Electric Factory, Bangalore is the Convenor of the Sub-Committee.

Kindly acknowledge receipt of this communication

I have the honor to be,
Sir,
Your most obedient servant,

sd. K.Parthasarathi.

Secretary.

HSR)

No.464/40-41 dated 19th Feby.41.

Immediate.

Copy of the above is forwarded with compliments to Mr.V.Rama Rau, B.Sc., Electrical Superintendent, Government Electric Factory and Convenor of the Plastics Sub-Committee for information and needful action.

The progress report called for may kindly be forwarded immediately.

Secretary,
Industrial Research Board.

XV—109
O. R.

NCIP 1940-124 O.R. 57,559

No. 1019/D

FROM

The Director of Industries,
Central Provinces and Berar.

To

THE Secretary,
Industrial Research Board,
BANGLORE.

Nagpur, Dated 13th Feb. 1941.

SUBJECT :— Formaldhyde.

Reference:- Your letter No. 285-3/40 dated the 4th January 1941.

SIR

I give below detailed information regarding demand market rate and present source of supply of the above article.

	Name of Textile Mill.	Quantity used per month. in lbs.	Market rate per lb.	Source of supply
(1)	Sawatram Ramprasad Mills Co., Ltd., Akola.	$1\frac{2}{3}$	0-8-0	Chemical firms in Bombay.
(2)	R.S.Reckchand Gopaldas Mohota Mills, Akola	4	0-6-0	Supply of British make.
(3)	Empress Mill, Nagpur	14	0-7-6	Standard Chemical Co., Bombay.
(4)	Pulgaon Cotton Mills Ltd., Pulgaon.	$4\frac{2}{3}$	0-8-6	Messrs Chemdyes (India) Ltd., Bombay.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE. No. 229 Date 18/2

Yours faithfully,

Director of Industries,
Central Provinces and Berar.

No.Chem.31/399

Office of the Director of Industries,
Old Custom House Yard,
Bombay, 13th February 1941.

From

The Director of Industries,
Bombay.

To

The Secretary,
Industrial Research Board,
Bangalore.

Subject:- Formaldehyde.

Dear Sir,

With reference to your letter No.285-3/40-1, dated 6th january 1941, on the subject cited above, I have to state that this Department consulted the Secretary, Millowners' Association, Bombay and the Imperial Chemical Industries (India) Ltd., Bombay in the matter. The Secretary Millowners' Association writes to say that as far as can be judged from the data collected a couple of years by the Association from a few representative mills, the consumption of Formaldehyde in mills in the city and Island of Bombay would appear to be neither large nor extensive. The average rate at which the material was then purchased was round about Ans.4/- per lb. Messrs. Imperial Chemical Industries (India) Ltd., informs me that the present price is Rs.0-6-6 per lb. delivered for Bombay and ample supplies are available.

I trust that the above information would serve your purpose.

Yours faithfully,

for Director of Industries.

SRB.12/2.

19/2

Tel. Address : "SANDAL" MYSORE.
Telephone No. 362.

GOVERNMENT OF MYSORE.

No. 31/40-41
Encl.

Office of the Director,
Sandalwood Oil Factory, Mysore.
Dated 20th February 1941.

FROM

S. G. SASTRY, Esq., B.A., M.SC.(Lond.),
Director, Sandalwood Oil Factory.

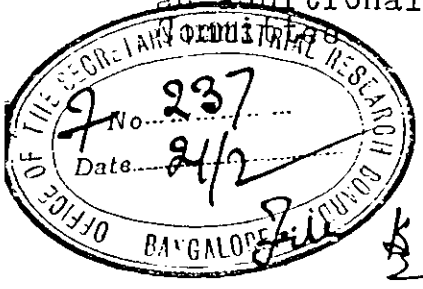
To K. Parthasarathi, Esq., B.A.,
Secretary, Industrial Research Board,
Govt.Electric Factory, Mysore Road, y
Bangalore-Cit

SIR,

Refce.- Your letter No.463/40-1 dated 29.2.41

Subject:- Plastics Sub.Committee.

I beg to acknowledge the receipt of your letter stating that I have been co-opted as an additional member of the Plastics Sub.



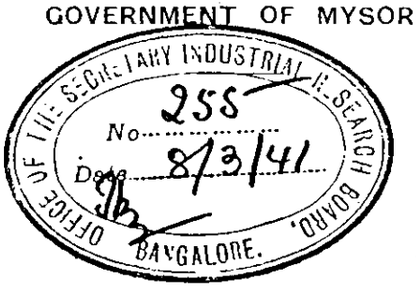
I have the honour to be,
S i r,
Your most obedient servant,

atk) 21/2/41

Director.

Tel. Address : "SANDAL" MYSORE.
Telephone No. 362.

GOVERNMENT OF MYSORE.



No. 7/4041.
Encl.

Office of the Director,
Sandalwood Oil Factory, Mysore.

Dated 7th March 1941.

FROM

S. G. SASTRY, ESQ., B.A., M.SC. (Lond.),
Director of Sandalwood Oil Factory.

To

K. Parthasarathi, Esq., B.A.,
Secretary, Industrial Research Board,
Government Electric Factory, Mysore Road,
Bangalore-City.

SIR,

Subject:- Manufacture of synthetic plastics in the State.

I have the honour to request you to furnish me information as to what is being done in the State, especially in Bhadravati and the Indian Institute of Science on the subject of manufacture of synthetic plastics. I have recently been co-opted as a member of the committee for the manufacture of plastics and I am not fully conversant as to what work has been done by this Committee till now.

There was an idea that the Mysore Government Lac & Paint Works should undertake the manufacture of some plastic compounds with shellac as the chief base. The idea was to manufacture a compound by combining shellac, urea, formaldehyde and one or two other ingredients. A laboratory batch was prepared and sent to the Government Electric Factory for test and report. Unfortunately, no report has been received till now.

What I want to know is whether there is going to be a definite demand in the State for any plastic compound that may be manufactured out of shellac. The latest work at the Indian Lac Research Institute, Namkum, shows that the plastic compounds prepared out of shellac cannot stand a temperature of more than 120 to 150°C. I understand that the Government of India desire that these experiments should continue at the Lac Research Institute.

p.t.o.

The output of lac in the State, the only grower being the Forest Department, is less than 20 tons a year. Practically the whole lot of it is used by the Government Lac & Paint Works for the manufacture of varnishes, sealing wax and a special variety of green paint. If we should manufacture any synthetic plastics out of shellac, we have to purchase the same from Northern India and the freight charges will be prohibitively high. Even the supplies from theForest Department are priced very high as compared with the market rates in Northern India. Therefore, the question of a steady and dependable supply of lac at economic rates has not been solved in the State as yet.

Granting that lac could be had in required quantities at economic rates, the question of utilizing the synthetic plastics prepared out of shellac will have to be looked into. Do you know if the Government Electric Factory is interested in these compounds and if so, what would be the likely demand? HAs the Government Electric Factory any special specifications in regard to this article?

I offered some remarks about the availability of shellac in the State. Regarding other raw-materials, urea is not manufactured in India. On enquiries being made, the price seems to be round about Rs.2/- per lb. and this is an impossible price to pay. So far as formaldehyde is concerned, it is expected that we may obtain adequate supplies at reasonable rates from Bhadravati. Regarding wood-flour, I have not been able to discover any source of supply in India. I made several enquiries and nothing has come out of them. Have you any information on this subject? I have been informed that the Government of India have made a grant to the Namkum Lac Research Institute for experiments on the manufacture of wood-flour. Therefore, at the present juncture there are difficulties to be faced regarding the supply of necessary raw-materials. Unless there is a reasonable prospect of the final product finding a market in the Government Electric Factory, to begin with, at all events, it may not be a wise thing to spend money on machinery and equipment to manufacture synthetic plastics from shellac.

I shall be glad if you can kindly furnish me information on the points raised in this letter.

I have the honour to be,

S i r,

Your most obedient servant,

Director.

SGS:ATK)

520/401

11th March 1

S.G. Sastry, Esq., B.A., M.Sc., (Lond),
Director of Sandalwood Oil Factory
Mysore.

Subject: Manufacture of synthetic plastics in the State.

I have the honor to acknowledge the receipt of your letter No.7/40-41 dated 7th March 1941 on the above subject. I shall again write to you in the matter.

I have the honor to be,
Sir,
Your most obedient servant,

SECRETARY.

HSR)

THE MYSORE IRON AND STEEL WORKS
BHADRAVATI

INDUSTRIAL RESEARCH WORK UNDERTAKEN AT THE MYSORE IRON AND STEEL WORKS, BHADRAVATI.

A. Problems under Research during 1939-40:--

1. Phenol-formaldehyde moulding powder.
2. Manufacture of Acetic Acid.
3. Protein plastics from groundnut oil-cake.
4. Carbon and natural graphite electrodes.

B. Problems under investigation during 1940-41:--

1. Phenol-formaldehyde moulding powder.
2. Manufacture of Acetic Acid.
3. Manufacture of Formaldehyde.
4. Carbon and Natural Graphite Electrodes.
5. Special Steels.

1. Phenol - formaldehyde moulding powder.

A pilot Plant with a capacity of 1/2 Cwt. of powder per 8 hours has been erected and trial operations successfully completed. Samples of moulding powders have been sent to the Government Electric Factory, Bangalore, for trial and their opinion is awaited. The Plant is expected to be ready for regular manufacture in a few days.

Phenol and Cresols from Indian sources are being examined as to their suitability for the manufacture of moulding powders.

2. Acetic Acid.--The manufacture of Acetic Acid from pyroligneous liquor via Sodium ~~Acetic~~ Acetate and Sulphuric Acid was examined as there happens to be a local market for sodium sulphate, the Mysore Paper Mills consuming this chemical to the extent of two tons a day. In order to meet this local demand for sodium sulphate and take full advantage of the war-time market for acetic acid, this process was fully investigated and found profitable. A scheme for a semi-commercial Plant has been prepared and is under consideration of the Management. Meanwhile, a new process for the recovery of acetic acid from Pyro liquor and claimed to be very cheap has been patented in Ceylon. This process is now under investigation before taking further steps in the matter. There is however likely to be some delay in taking up this scheme as the military requirements of Calcium Acetate have to be met with.

3. Formaldehyde.--A second-hand plant of a capacity of about five tons of formalin has been purchased and is under erection. It is hoped that we will be able to manufacture this chemical in a month or two.

4. Carbon and Graphite Electrodes.--Experiments in connection with graphitising of petroleum coke are progressing satisfactorily. . . The results are very encouraging and in the course of the next few weeks, large scale trials will be

attempted.

5. Special Steels.--At the time of the outbreak of war, we were faced with a serious shortage of special steel tools for machining work. A good deal of investigation has been carried out, and the results obtained so far encourage us to undertake further steps required in order to meet the stringent demands for high class tools.

K. Venkatachar
General Manager.

Bhadravati,)
D/2-2-1941.)

BNM:6

526/40-1

14th March 1

The General Manager,
Government Electric Factory,
Bangalore.

xxxx

Dear Sir,

The Director, Sandalwood Oil Factory, Mysore, reports that sometime back, he had sent you a laboratory batch of some plastic compound with shellac base prepared by him for test and report It is really unfortunate to note from his letter that you have not furnished him with your test report and observations.

Since the Government Electric Factory, is specially interested in plastics, your cooperation in this behalf is very essential. I am to request you therefore to be so good as to arrange to forward the test report to the Director, Sandalwood Oil Factory, under advise to this office.

I may also be informed if the Government Electric Factory is interested in synthetic plastics compounds prepared out of shellac etc. and if so, the likely demand under each variety, with special specifications if any may also be intimated.

I request the favour of an immediate reply.

Yours faithfully,

for SECRETARY.

HSR)

The brief review of work done by the sub-committee was read out and the proceedings of the sub-committee were recorded. The scheme submitted by Mr. P. S. Narayana, Consulting Industrial Geologist, on the manufacture of Graphite products in the State (forwarded by Government) had been considered by the sub-committee which was of opinion that the scheme was superficial, wanting in details. The Board accepted the opinion of the sub-committee.

The Chairman, Mysore Iron and Steel Works, gave a brief account of the experiments conducted at Bhadravati re : Graphite Electrodes and said that the *results* of experiments were very encouraging. After discussion, the following *resolutions were* adopted :—

(1) *that the experiments on* Graphite Electrodes etc., at Bhadravati should be continued expeditiously.

(2) that the facilities required to *continue the experiments* might be given to the Officers of the Mysore Iron & Steel Works at the Government *Electric Factory*.

(6) Manufacture of Plastics.

PERSONNEL.

(1) Mr. V. Rama Rau, B. Sc., Government Electric Factory. (Convenor),
(2) Mr. Mohamadali, B.Sc., Mysore Iron & Steel Works.
(3) Mr. V. Paul, M.Sc., Mysore Iron & Steel Works.
(4) Mr. M. Srinivasaiya, B.A., F.I.I.Sc., Indian Institute of Science.
(5) Mr. S. G. Sastry, B.A., M.Sc. (Lond.), Director of Sandalwood Oil Factory.

The Chairman, Mysore Iron & Steel Works, gave a brief account of the work done at Bhadravati so for. He informed the members that the formaldehyde plant had since been erected, and the production of powder in the pilot plant was about 50 lbs. a day for the present.

The mouldings taken out from phenol formaldehyde powder recently manufactured at Bhadravati were then examined, and they were found to be satisfactory. The Chairman pointed out that phenol powders might be first perfected before taking up other compositions, and that the sub-committee should actively and promptly pursue the matter and also keep in touch with the experiments conducted at Bhadravati.

The question of the manufacture of plastics with shellac base was also considered. The Director, Sandalwood Oil Factory, explained that the scheme was not one of economic importance to the State, as quantities of raw materials such as Lac, wood-flour, etc., were not available locally. It was resolved to drop the subject.

(7) Manufacture of Potassium Permanganate.

PERSONNEL

(1) The Director of Geology (Member and Convenor).
(2) The Director of Sandalwood Oil Factory.
(3) The Government Director, Industrial Concerns.
(4) Dr. K. R. Krishnaswamy, B. A., D. Sc., F. I. C., Indian Institute of Science.

The report of Mr. L. S. Chandrakanta, Research Scholar of the Mysore Geological Department and the proceedings of the Committee were recorded. The Director, Sandalwood Oil Factory, stated that the Research Scholar had tackled the subject very well and the very approach of the subject was novel and instructive. The work of the Research Scholar was noted with satisfaction. The recommendation of the Committee to refer the scheme to the Government Bichromate Factory to take it up as an extension of work at a suitable opportunity was approved.

(8) Manufacture of Cement Asbestos.

PERSONNEL.

(1) Mr. B. Rama Rau, M.A., D.I.C., F.G.S., Director of Geology (Convenor).
(2) Mr. S. G. Sastry, B.A., M.Sc. (Lond.), Director of Sandalwood Oil Factory.
(3) Mr. M. K. Narasimhan, B.A., Cement Factory.

The Director of Sandalwood Oil Factory stated that he was taking action to dipsose of the existing stock of asbestos. The Chairman enquired if there was any scope for the manufacture of Boiler composition from asbestos and whether it would not thrive as small scale industry. The subject was discussed in detail. The question of adequate supplies of raw material—asbestos—came up and the Secretary invited the attention of the Board to the Administration Report of the Mysore Geological Department for the year 1938-39 where it was stated that in Idegondanahalli area, Hole-Narasipur taluk, 8,000 tons of asbestos had been located. It was considered desirable and necessary to utilise the raw material locally available to the best advantage.

The Chairman, Mysore Iron & Steel Works brought to the notice of the Board that the possibilities of manufacturing asbestos pipes might be examined, in view of the demand for military and other works.

It was finally resolved to request the sub-committee to examine the question of manufacture of Asbestos Boiler composition and also that of manufacture of asbestos cement pipes and favour the Board with its views.

(9) Manufacture of Abrasives.

PERSONNEL.

(1) The Director of Geology, (Member and Convenor).
(2) Dr. J. C. Ghosh, Director, Indian Institute of Science.
(3) Mr. P. S. Narayana, Cunsulting Industrial Geologist.
(4) The Government Director, Industrial Concerns.

Proceedings of the sub-committee and Government Orders No. D. 2908-11—I. & C. 230-40-8 dated 23rd December 1940 and No. D. 3468-69—I. & C. 230-40-16 dated 24th January 1941 sanctioning Rs. 2,000 and Rs. 500, respectively to Mr. P. S. Narayana, Consulting Industrial Geologist, on the recommendations of the Board, were read and recorded. The Director of Industries and Commerce pointed out that samples of abrasive articles prepared by Mr. Narayana were not satisfactory. The Chairman observed that the Director of Geology was in direct touch with Mr. Narayana and will report further on the progress of the investigations.

(10) Manufacture of Chemicals, Drugs and Essential Oils.

PERSONNEL.

(1) *Sastravaidyapravina* Dr. S. Subba Rao, B.A., M.B.C.M., L.R.C.P., D.P.H., (Chairman).
(2) Dr. B. T. Narayana, Agricultural Chemist.
(3) Mr. B. H. Krishna, Industrial and Testing Laboratory.
(4) Dr. B. L. Manjunath, Central College.
(5) Dr. P. C. Guha, Indian Institute of Science.
(6) Dr. L. S. Doraswami, Economic Botanist.
(7) Mr. M. S. Krishna Rao, Government Soap Factory.
(8) Dr. M. N. Ramaswamy, Forest Research Laboratory.
(9) Mr. B. Sanjeeva Rao, Indian Institute of Science.
(10) Mr. V. Venkatachar, Assistant Director of Industries and Commerce, (Secretary).

The report of the sub-committee was recorded. The Chairman remarked that the subject was a very important one and that necessary immediate action on the resolutions of the sub-committee might be taken and pursued.

The Director of Sandalwood Oil Factory said that Mr. Sundara Rao of Mysore—a gentleman with experience in the cultivation of essential oil plants—whom he consulted, was of opinion that the land of the Sandalwood Oil Factory at Mysore was not good for geranium cultivation. He also mentioned that Mr. B. V. Pandit of Nanjangud himself a large consumer of geranium oil, had imported cuttings from Yercaud and planted them at Nanjangud. At this stage the subject proposed by the Superintendent, Government Soap Factory, re: cultivation of patchouli and geranium in the factory (subject No. IV (E)) was also considered. The Chairman pointed out that the Forest and Agricultural Departments who are placed in a better position might be asked to take necessary

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(2) Dr. B. T. Narayana, Agricultural Chemist.
(3) Mr. B. H. Krishna, Industrial and Testing Laboratory.
(4) Dr. B. L. Manjunath, Central College.
(5) Dr. P. C. Guha, Indian Institute of Science.
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(7) Mr. M. S. Krishna Rao, Government Soap Factory.
(8) Dr. M. N. Ramaswamy, Forest Research Laboratory.
(9) Mr. B. Sanjeeva Rao, Indian Institute of Science.
(10) Mr. V. Venkatachar, Assistant Director of Industries and Commerce, (Secretary).

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immediate action to grow the herbs and other essential oil bearing plants including patchouli and geranium as recommended by the sub-committee in their report placed for discussion, and the departments might also be requested to arrange if possible for the cultivation of these plants in an experimental plot at Balehonnur and Kemmangundi.

The Chairman also desired that Mr. S. G. Sastry, might be requested to publish a phamphlet *re*: Geranium containing full information with regard to its importance, etc., for being circulated and given publicity in the State.

The Chairman desired to know the progress with regard to Vitivert cultivation and called for a report.

(11) Production of Cinchona.

The report of the Chief Conservator of Forests and also that of Dr. M. N. Ramaswamy, Forest Research Chemist were placed before the House and recorded.

(12) Sulphur.

The report of the Director of Geology in Mysore was recorded.

(13) Manufacture of Urea.

PERSONNEL

(1) The Government Director of Industrial Concerns (Member and Convenor).
(2) The Director of Sandalwood Oil Factory.
(3) Dr. J. C. Ghosh, D.Sc. F.N.I. Director, Indian Institute of Science.
(4) Dr. V. Subrahmanyan, D.Sc., F.I.C., Indian Institute of Science, Bangalore.
(5) Dr. B. T. Narayanan, Agricultural Chemist.

The Chairman stated that a separate sub-committee was recently constituted to examine the possibilities of the manufacture of Urea.

The Director of Sandalwood Oil Factory explained the importance of Urea specially in plastics industry. He was of the opinion that a whole time chemist should be appointed to conduct experiments. It was pointed out that experiments had already been conducted at the Indian Institute of Science for conversion of compressed Ammonia into Urea and that Dr. Ghosh, Director of the Institute, would be glad to place the results before the committee subject to the conditions that might be laid down by the Government of India. The Chairman remarked that it was unnecessary to duplicate the work since the results of experiments at the Indian Institute of Science might be made available and the appointment of a whole time chemist was therefore not necessary. He, however, suggested that anyone of the chemists either at Belagola or at Bhadravati might be given facilities for experiments.

MISCELLANEOUS.

Utilisation of Molasses for the recovery of potash salts.

The reply received from the Secretary, Mysore Sugar Company, Ltd., was read. The Chairman observed that the question might be actively pursued and the Sugar Company requested to expedite their views in the matter.

The following subjects on the agenda were deferred for consideration at the next meeting for want of time.

(1) Compilation of information re: Industrial Researches in the State.
(2) Scope and Functions of the Research Board.
(3) Consideration of subjects proposed by:
  (*a*) Government Director, Industrial Concerns—Manufacture of glass bulbs, silk worm gut, etc.
  (*b*) Director of Industries and Commerce,—Suggesting that certain items of researches taken up by the Government of India may also be taken up here.
  (*c*) General Manager, Government Electric Factory.—Utilisation of steel shavings.
  (*d*) Manager, Mysore Spun Silk Mills, Ltd, Channapatna—Manufacture of bobbins, shuttles, etc., etc.,
  (*e*) Dr. A. V. Varadarajaiengar, B.A., D.Sc., A.I.E. Indian Institute of Science—Manufacture, of starch from sweet potato.

The Chairman thanked the members for their useful suggestions and the meeting terminated.

K. PARTHASARATHI,
Secretary.

N. MADHAVA RAU.
Chairman.

WD 1603—GPB—100—21-4-41.

Confidential

INDUSTRIAL RESEARCH BOARD

Proceedings of the Second Meeting of the Industrial Research Board Sub-Committee, held on Saturday the 15th March 1941 at 1 p.m. at the Chambers of the First Member of Council.

PRESENT

Rajamantrapravina N. Madhava Rau, Esq., B.A.,B.L.,
First Member of Council. (*Chairman*).

MEMBERS

1. Mr. M. Venkatanaranappa, B.A.,
   Chairman, Mysore Iron & Steel Works, etc., Bangalore.
2. Mr. S. G. Sastry, B.A., M.Sc., (Lond.),
   Director, Sandalwood Oil Factory, Mysore.
3. Mr. B. G. Appadurai Mudaliar, B.A.,B.Sc.,A.M.I.,Mech. E.,
   Director of Industries & Commerce in Mysore, Bangalore.

Mr. K. Parthasarathi, B.A.,
General Manager, Government Electric Factory, Bangalore.
(*Secretary*).

ATTENDED BY INVITATION

1. Mr. M. Venkatesa Iyengar, M.A.,
   Secretary to the Government of Mysore,
   Development Department, Bangalore.

ABSENT

1. Mr. E. V. Ganapati Iyer, B.Sc.,
   Government Director of Industrial Concerns, Bangalore.

AGENDA

1. Brief review of work done by various sub-committees.
2. Compilation of information *re* Industrial Researches in the State.
3. Scope and Functions of the Research Board.
4. Consideration of subjects proposed by:—

(*a*) Government Director of Industrial Concerns—Manufacture of glass bulbs, silk worm guts, etc.

(*b*) Director of Industries & Commerce—suggesting that certain items of researches taken up by the Government of India may also be taken up here.

(*c*) General Manager, Government Electric Factory—Utilisation of steel shavings.

(*d*) Manager, Mysore Spun Silk Mills, Ltd., Channapatna—Manufacture of bobbins, shuttles, etc.

(*e*) Superintendent, Government Soap Factory—Cultivation of patchouli and geranium in the factory nursery.

(*f*) Dr. A. V. Varadarajaiengar, B.A., D.Sc., A.I.C., Indian Institute of Science—Manufacture of starch from sweet potato.

5. Any other Subjects.

GENERAL

The Chairman invited reference to the agenda circulated to members and said that the review of work done by the several sub-committees may be taken up for consideration.

Manufacture of Super-phosphates

PERSONNEL

(1) Dr. J. C. Ghosh, D.SC., F.N.I., Director of Indian Institute of Science, Bangalore. (CONVENOR)

(2) Mr. S. G. Sastry, B.A., M.SC., (Lond.), Director, Sandalwood Oil Factory, Mysore.

(3) Dr. K. R. Krishnaswamy, B.A.,D.Sc., (Lond.), F.I.C., Indian Institute of Science, Bangalore.

(4) Mr. E. V. Ganapati Iyer, B.Sc., Government Director of Industrial Concerns, Bangalore.

The proceedings forwarded by Dr. Ghosh, Convenor of this sub-committee, were read and recorded. The Director, Sandalwood Oil Factory, explained the work done by the sub-committee so far. It was resolved that further action might be taken in light of the sub-committee's report.

After general discussions, the chairman suggested that the Managing Director, Mysore Chemicals & Fertilisers, Ltd., might be asked to ascertain any reduction in the freight for the transport of bones from Goribidnur, Bangalore and other important outlying stations to Belagola would be helpful and what traffic could be promised.

(2) Manufacture of Hydrated Lime.

PERSONNEL.

(1) Mr. B. Rama Rau, M.A., D.I.C., Director of Geology in Mysore, (Convenor).

(2) Dr. H. S. Sharma, Ph.D. (Lond.), D.I.C. (Lond)., Chemist, Mysore Paper Mills, Ltd.

(3) Mr. V. Balakrishna, B.A., General Manager, Mysore Paper Mills, Ltd.

(4) Mr. G. Gundu Rao, M.Sc.. A.I.I.Sc., Mysore Sugar Company, Ltd.

(5) Mr. M. M. Ganapati, Superintendent, Chemical Plant, Mysore Iron & Steel Works.

The Director of Industries and Commerce stated that the experimental batch of hydrated lime from kankary limestone was found by the Mysore Sugar Company to be as good as the imported variety.

The Chairman remarked that the Director of Geology might be requested to forward a detailed up-to-date report on the investigations *re* hydrated lime. It was also decided that the experiments should be continued at Bhadravati till definite results were obtained.

(3) Manufacture of Magnesite Bricks.

It was decided that as resolved in the last Board meeting further experiments might be conducted at the Porcelain Factory, when the tunnel kiln was ready and the Government Director, Industrial Concerns, be requested to take necessary action in the matter and send his report.

(4) Manufacture of Caustic Soda.

PERSONNEL.

(1) Mr. E. V. Ganapati Iyer, B.Sc., Government Director of Industrial Concerns, (Convenor)

(2) Mr. S. G. Sastry, B.A., M.Sc., (Lond.), Director of Sandalwood Oil Factory.

(3) Dr. B. K. Ram Prasad, M.A., (Hon.), D.Sc., M.I.E., Government Electrical Department.

(4) Dr. K. R. Krishnaswamy, B.A., D.Sc., F.I.C., Indian Institute of Science.

(5) Mr. B. Rama Rau, M.A., D.I.C., F.G.S., Director of Geology in Mysore.

The proceedings of the sub-committee were recorded. It was noted that the sub-committee had requested Dr. Krishnaswamy to draw up a scheme in consultation with Mr. S. G. Sastry, for the consideration of the sub-committee. It was decided to await the further report of the sub-committee.

(5) Manufacture of Graphite Electrodes and other Products.

PERSONNEL.

(1) Mr. D. V. Krishna Rao, B.A., Mysore Iron and Steel Works, (Convenor).

(2) Dr. B. K. Ram Prasad, M.A. (Hon.), D.Sc., M.I.E., Government Electrical Department.

(3) One Chemist from the Mysore Paper Mills, Ltd.

(4) One from the Indian Institute of Science.

531/40-1
Jw.

19th March 1
20

S.G. Sastry, Esq., B.A., M.Sc., (Lond),
Director, Sandalwood Oil Factory,
Mysore.

Subject: Manufacture of plastics in the State.

With reference to your letter No.7/40-41 dated 7th March 41 on the above subject, I am directed to forward herewith a copy of the proceedings of the latest meeting of the Plastics sub-committee, which is self-explanatory and will give you an idea of the work done by this sub-committee so far I send herein enclosed a note on the subject received from the Mysore Iron & Steel Works for your information.

With regard to plastics with shellac base, the Board is of the opinion that the matter is not of economic importance as sufficient raw materials - Lac - is not available in the State.

As regards Urea, you are already aware that a separate sub-committee has been constituted to examine the question, especially in view of the importance of this chemical in the Plastics Industry. Dr. Ghosh, Director, Indian Institute of Science, has intimated that experiments have been conducted at the Institute for conversion of Compressed Ammonia into Urea and that he would be glad to place the results before the Urea Sub-Committee, subject to the conditions that may be laid down by the Government of India for the utilisation of such results. The Government Director of Industrial Concerns who is the Convenor of this sub-committee is taking necessary action on this.

The Board of Scientific and Industrial Research, Government of India, have recently sanctioned a grant of Rs5,000/- to Dr. H.K. Sen, Director, Indian Lac Research Institute, Ranchi for the wood-flour plant. I understand that wood-flour is manufactured on a very small scale at Bhadrachati.

I agree with your views on other points raised in your letter under advertance. I understand that the test report on the sample shellac plastic compound sent by you, has been forwarded to the Officer-in-charge, Government Lac and Paint Works by the Government Electric Factory.

I have the honor to be,
Sir,
Your most obedient servant,

sd. K. Parthasarathi.

Secretary.

HSR)

No. 532/401

Copy of the above is forwarded with compliments to Mr.V. Rama Rau, B.Sc., Convenor, Plastics Sub-Committee, Government Electric Factory, Bangalore for information and further action. The progress report may kindly be arranged to be forwarded at an early date.

Secretary.

HSR)

From

The General Manager
GOVERNMENT ELECTRIC FACTORY
Mysore Road, BANGALORE CITY.

To

The Secretary,
Industrial Research Board,
Bangalore.

*Ref. No.....*P-1407/6 *Date.....*24th March '41.

Dear Sir,

Ref: Your No.526/40-1 of 14-3-1941.

Details of observations ??

We write to inform you that the Test Report of the Laboratory Batch of Plastic Compound with Shellac Base have since been sent to the Director, Sandalwood Oil Factory, Mysore.

We also write to inform you that we are not at present interested in Synthetic Plastics Compounds prepared out of Shellac.

Indicate Dr Sor

Yours faithfully,
Government Electric Factory.
A. Ananthakrishnan
for General Manager.

HSK.

271
Dt. 25/3/41

8 2/2/41.

Copy of note received from the Mysore Iron and Steel Works re: Industrial Researches etc.

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1) Phenol - formaldehyde moulding powder. A pilot plant with a capacity of ½ cwt. of powder per 8 hours has been erected and trial operations successfully completed. Samples of moulding powders have been sent to the Government Electric Factory, for trial and their opinion is awaited. The plant is expected to be ready for regular manufacture in a few days. Phenol and Cresols from Indian sources are being examined as to their suitability for the manufacture of moulding powders.

2) Formaldehyde: A second-hand plant of a capacity of about five tons of formalin has been purchased and is under erection. It is hoped that we will be able to manufacture this chemical in a month or two.

3) Protein plastics from groundnut oil cake. This also being attempted.

X X X X

'Extract'

Secretary,
Industrial Research Board,
Bangalore.

No. 559/40-1

27th March 1

S.G. Sastry, Esq., B.A., M.Sc., (Lond),
Director, Sandalwood Oil Factory,
Mysore.

Subject: Manufactureof plastics in the State.

In continuation of this office letter No.531/40-41 dated 19/20th March 1941, on the above subject, I have the honor to state that it is ascertained from the Government Electric Factory that a copy of the Test report on the sample shellac plastic compound sent by you has since been sent to you. The factory, I understand, is not interested at present, in shellac plastic compounds.

I have the honor to be,
Sir,
Your most obedient servant,

SECRETARY.

GOVERNMENT OF MYSORE.

Industrial Research Board.

No. 5453 /40-41 Bangalore, Dated, 27th March 41.

From:

P. Parthasarathi, Esq.
Secretary, Industrial Research Board,
Mysore Road, Bangalore.

To

All the thirteen Sub-Committees.

Sir,

Subject: Sub-Committee - Meetings.

I am directed to inform you that the date of the Sub-Committee meetings are not intimated by some of the Convenors. I am therefore desired to request you to be so good as to arrange to keep the Board informed of the engagements of the Sub-Committees as and when the meetings are convened.

I have the honor to be,
Sir,
Your most obedient servant,

Parthasarathi

SECRETARY.

(3R-14)27-3-41.

TELEGRAMS: 'G.E.F.' TELEPHONE: 2046

V. RĀMA RAO, ESQ., B.Sc.
Elec. SUPERINTENDENT & Convenor,
PLASTICS SUB COMMITTEE.

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

D.O. No. 14393

Bangalore, 31st March *19* 41.

The Secretary,
Industrial Research Board,
Bangalore.

Dear Sir,

I am enclosing herewith a copy of the Circular dated the 20th instant issued by Mr. H.K. Sen, Director, Indian Lac Research Institute, Namkum, about the Conference of the users of Moulding Powders and Manufacturers of Moulded Articles, to be held at Calcutta on the 5th April '41.

As I am one of the manufacturers of the Moulded Articles and Convenor of the Plastics Sub-Committee which is interested in furthering the research work for the manufacture of not only Bakelite Powder but also Moulding Powders from raw materials available in India.

Since Shellac happens to be one of the materials in which the State is interested, I feel that it would be advantageous to attend this Conference.

Yours faithfully,

Rama Rao
Convenor,
PLASTICS SUB-COMMITTEE.

HSK.

Encl: Circular.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE. CENTRAL
No. 278
Date 31/3/41

Submd.
If appd, a note will be put up to Chairman for orders. No records.
31/3/41
31/3

INDIAN LAC RESEARCH INSTITUTE,
Namkum.

Dated the 20th March, 1941.

The Indian Lac Cess Committee decided that a Conference of Plastic Moulded Goods Manufacturers in India should be held in order to discuss the feasibility of using Shellac moulding powders in the place of imported synthetic resins. The Indian Lac Research Institute has developed, as a result of its researches, a moulding powder suitable for use in Bakelite presses. In view of the difficulty in importing synthetic moulding powders and their high costs, it is hoped that such a Conference of interested parties may lead to the commercial manufacture of moulding powders based chiefly on shellac, which have been found by actual large-scale trials to be both cheap and serviceable. As the demand for shellac moulding powders has reached a stage when general commercial exploitation is desirable by private enterprises or syndicates, the Director of the Indian Lac Research Institute will at this Conference explain the processes and the costs of manufacturing both compression and injection moulding powders and would be glad to receive, in advance, any comments or suggestions with a view to enable him to formulate other points for discussion.

The Conference will be held at the hall of the Indian Chamber of Commerce, Calcutta, 102 A, Clive Street, Calcutta, on the 5th April, 1941, at 5 P.M. You are earnestly requested to attend the meeting and take part in the discussions at the Conference.

Sd/- H.K. Sen,

Director.

"Copy".

D/31-3-41.
HSK.

Rama Rao
Convener
Plastics Sub Committee.

562

2nd April 1

V. Rama Rau, Esq., B.Sc.,
Convenor, Plastics Sub-Committee,
Electrical Superintendent, Government
Electric Factory, Bangalore.

Subject: Plastics.

I am directed to inform you that in the Board meeting held on 15th March 1941, the Chairman observed that phenol powders might be first perfected before taking up other compositions and that the Sub-Committee should actively and promptly pursue the matter and also keep in touch with the experiments conducted at Bhadravati. Necessary prompt action may kindly be taken in the matter.

The scheme for the manufacture of plastics with shellac base was also considered at the meeting of the Board and as it was not one of economic importance to the State, it was resolved to drop the subject.

I have the honor to be,
Sir,
Your most obedient servant,

sd. K. Parthasarathi.

Secretary.

No. 563/401

Copy with compliments to the Chairman, Mysore Iron and Steel Works, etc., Bangalore, for favour of information.

Copy of the proceedings of the meeting of the Board is under print and will be forwarded very early.

Secretary.

HSR)

TELEGRAMS: 'G.E.F.' TELEPHONE: 2046

V. RAMA RAO. ESQ., B.Sc.
Elec. SUPERINTENDENT & Convenor,
PLASTICS SUB COMMITTEE.

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

XXX D.O. No. 14393.

Bangalore, 31st March 19 41.

OFFICE OF THE
FIRST MEMBER OF COUNCIL
APR 1 1941
No. M.369

The Secretary,
Industrial Research Board,
Bangalore.

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Since Shellac happens to be one of the materials in which the State is interested, I feel that it would be advantageous to attend this Conference.

Yours faithfully,

Sd/- V. Rama Rao.

Convenor,
PLASTICS SUB-COMMITTEE.

HSK.

Encl: Circular.

No. 14395. Copy of the above is submitted to the Chairman, Industrial Research Board, Bangalore, for kind information. A copy of the Circular is also herewith submitted.

Rama Rao
Convenor.

Encl: One.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE. GUARD
No. 280
Date 2/4/41

INDIAN LAC RESEARCH INSTITUTE,
Namkum.

Dated the 20th March, 1941.

The Indian Lac Cess Committee decided that a Conference of Plastic Moulded Goods Manufacturers in India should be held in order to discuss the feasibility of using Shellac moulding powders in the place of imported synthetic resins. The Indian Lac Research Institute has developed, as a result of its researches, a moulding powder suitable for use in Bakelite presses. In view of the difficulty in importing synthetic moulding powders and their high costs, it is hoped that such a Conference of interested parties may lead to the commercial manufacture of moulding powders based chiefly on shellac, which have been found by actual large-scale trials to be both cheap and serviceable. As the demand for shellac moulding powders has reached a stage when general commercial exploitation is desirable by private enterprises or syndicates, the Director of the Indian Lac Research Institute will at this Conference explain the processes and the costs of manufacturing both compression and injection moulding powders and would be glad to receive, in advance, any comments or suggestions with a view to enable him to formulate other points for discussion.

The Conference will be held at the hall of the Indian Chamber of Commerce, Calcutta, 102 A, Clive Street, Calcutta, on the 5th April, 1941, at 5 P.M. You are earnestly requested to attend the meeting and take part in the discussions at the Conference.

Sd/- H.K. Sen,

Director.

"Copy".

D/31-3-41.
HSK.

Convenor,
Plastics Sub Committee,

TELEGRAMS: 'G.E.F.' TELEPHONE: 2046

V. RAMA RAO. ESQ., B.Sc.
Ele. SUPERINTENDENT & Convenor,
Plastics Sub-Committee.
D.O. No.

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

Bangalore, April, 3rd/4th, *19*41.

S.G. Sastry Esq., B.A., M.Sc.,(Lond),
Director, Sandalwood Oil Factory, Mysore,
M. Sreenivasiya, Esq., B.A., F.I.I.Sc.,
Indian Institute of Science, Bangalore.
V. Paul Esq., M.Sc.,
Chemist, Mysore Iron & Steel Works, Bhadravati.
Mohamed Ali Esq., B.Sc.,
Chemist, Mysore Iron & Steel Works, Bhadravati.

Dear Sir,

It is proposed to conduct the next meeting of the Plastics Sub-Committee on Monday the 14th. April 1941 at 9 a.m. at the Mysore Iron & Steel Works, Bhadravati. Please let me know whether the date suits you.

Thanking you for an early reply,

Yours faithfully,

Sd. V. Rama Rao.

Convenor,
PLASTICS SUB-COMMITTEE.

OFFICE OF THE SECRETARY INDUSTRIAL R. SEARCH BOARD, BANGALORE. No. 283 Date 4/4/41 SBS.

No. 1688

Copy of the above is forwarded with compliments to the Secretary, Industrial Research Board, Mysore Road, Bangalore City for information.

Rama Rao
Convenor,
PLASTICS SUB-COMMITTEE.

SBS

4/4

TELEGRAMS: 'G.E.F.'

TELEPHONE: 2046

V. RAMA RAO. ESQ., B.Sc.
Ele. SUPERINTENDENT & Convenor,
Plastics Sub-Committee.

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

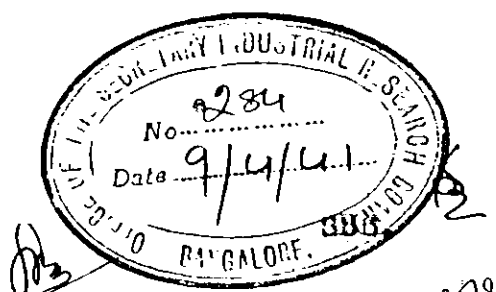
D.O. No.

Bangalore, April, 9th. *19* 41.

S.G. Sastry Esq.,B. A., M. Sc. (Lond).,
Director of Sandalwood Oil Factory,Mysore.
M. Sreenivasiya, Esq., B.A., F.I.I.Sc.,
Indian Institute of Science, Bangalore.
V. Paul Esq., M. Sc.,
Chemist, Mysore Iron & Steel Works, Bhadravati.
Mohamed Ali Esq., B. Sc.,
Chemist, Mysore Iron & Steel Works, Bhadravati.

Dear Sir,

In continuation of my letter No. dated 3/4-4-1941, I write to inform you that the meeting of the Plastics Sub-Committee will be held on Tuesday the 15th. instant at 9 a.m. inted of 14th. as already intimated. I hope this date will be convenient to you.



Yours faithfully,

Sd. V. Rama Rao.

Convenor,
Plastics Sub-Committee.

No. 16878 Copy of the above is forwarded with compliments to the Secretary, Industrial Research Board, Bangalore City for information, in continuation of my letter no 16688 of 3/4.4.41

Rama Rao
Convenor,
Plastics Sub-Committee.

SBS.

GOVERNMENT ELECTRIC FACTORY

PHONE : 2046
TELEGRAMS: "GEF" BANGALORE.
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.
11th April 1941
Ref. .....

Dear Sir,

In continuation of my letter No. dated 8-4-1941, I write to inform you that the meeting fixed on the 15th instant is postphoned. The exact date of the meeting will be intimated to you later on.

Yours faithfully,

CONVENOR,
Plastics Sub-Committee.

CHR)

No 15054 Copy of the above is forwarded with compliments to the Secretary, ~~Mysore~~ Industrial Research Board, Bangalore City for information in continuation of my letter No. 14873.

Rama Rao
CONVENOR,
Plastics Sub-Committee.

GOVERNMENT ELECTRIC FACTORY

TELE { G E M "GEF" BANGALORE
PHONE 2046 GENERAL MANAGER
2691 OFFICE
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.

6th. May 1941.

Ref 16141-94

Dear Sir,

I am enclosing herewith a note prepared by Mr. V. Paul, Chemist, Mysore Iron & Steel Works, Bhadravati, for discussion in the Plastics Sub-Committee meeting to be held on 10th. inst.

Kindly acknowledge receipt of the enclosure.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD. BANGALORE. No. 322 Date 6/5/41

Yours faithfully,

Sd.V. Rama Rao.

Convenor,
Plastics Sub-Committee.

Copy forwarded with compliments to the Secretary, Industrial Research Board, Bangalore for information.

Encl: One.
SBS.

Acknowledged 6/5/41

Convenor.

GOVERNMENT ELECTRIC FACTORY

List of subjects for the meeting of the PLASTICS SUB-COMMITTEE to be held on 10th May 1941 at Bhadravati:-

1. The container to be used for storing and distributing Bakelite moulding powders.

2. Developing applications of Bakelite resins for making laminated sheets, rollneck bearings, plywood, wood veneering abrasive wheels, etc.

3. Manufacture of oil-soluble Bakelite resins.

4. Manufacture of Paraformaldehyde and Hexamethylene tetramine along with Formaldehyde which is to be manufactured at Bhadravati.

5. Both Paraformaldehyde and Hexamine are required for making Bakelite moulding powders, especially when the resins are made by the two-stage process. Two-stage process has advantages over one-stage process of making Bakelite, but at present it is difficult to apply the two-stage method because of the very high cost of imported Parafor and Hexamine.

Hexamine has also got medicinal value apart from its application in Plastics industry.

5. Manufacture of Phenol-furfural Moulding Powders:-

Phenol-furfural resins are thermosetting, and could be made cheaper than Phenolformaldehyde (Bakelite) resins. Also the proportion of phenol required for making the resin is about 30% less in the case of phenol-furfural than in case of Bakelite. This is a point of considerable advantage since phenol is a raw material which has to be got from outside Mysore State.

Furfural is obtained by acide hydrolysis of agricultural waste materials and workable quantities are found in cane begasse, straw, corn cobs, etc.

Compared to Bakelite the only drawback of furfural resins is that articles moulded from them are black or at best brown. But this is not a serious objection as long as there is considerable demand for black and brown moulding powders.

Since cane begasse is available in large quantities at one place this could be worked as a convenient raw material for extracting furfural. At present Begasse in Mysore has fuel value. In future it may also find application for making sound proof boards like celorex. In either case the value of Begasse will not be lowered by extracting the furfural.

The following figures will give a rough idea of the cost of making furfural and furfural-resins and also the percentage of phenol required for making the resin.

Cost of making furfural from cane Begg

Cost of Begasse 100 lbs. at Rs. 10 per ton ...	0-8-0
Sulphuric acid 5 lbs. at 0-1-6 per lb ...	0-7-6
Working charges including steam, labour et	3-0-0
	3-15-6

Cost of Making Furfural from Cane Begasse:-

(Contd.)

Say Rs. 4/-.

Yield of furfural 7lbs.
Price per lb. of furfural ... 0-9-0

Cost of making Phenol-furfural resin.

Price of 100 lbs of Phenol at 14 as. a lb.	87	8	0
Price of 100 lbs furfural at 9 as. a lb	56	4	0
Working expenses	5	0	0
T o t a l ..	148	12	0

Yield of resin .. .. 180 lbs.
Price per lb. of resin .. 0- 13- 3
Amount of Phenol required for making 100 lbs.of resin .. 52.5 lbs. nearly

Cost of making Phenol-formaldehyde resin.
(Bakelite)

Cost of 100 lbs.of phenol at 0-14-0 per lb.	87	8	0
Cost of 95 lbs.formaldehyde at 0-5-6 per lb.	32	10	0
Working expenses	5	0	0
T o t a l	125	2	0

Yield of resin ... 115 lbs.
Price per lb. of resin Rs.1-1-6 nearly.
Phenol required for making 100 lbs. of resin ... 87 lbs. nearly.

From the data it is evident that for making 100 lbs. of Phenol-formaldehyde resin we require about 87 lbs. of Phenol while for making the same quantity of Phenol-furfural resin we require only about 56 lbs. of Phenol.

While the price of Phenol-formaldehyde resin is about Rs.1-1-6 per lb. the price of Phenol-furfural resin is only about Rs.0-13-3 per lb.

Taking into consideration these favourable points, it appears interesting to study the furfural resins further.

Bangalore,
5th May 41.
CBR)

Rama Rao
CONVENOR,
PLASTICS Sub-COMMITTEE.

GOVERNMENT ELECTRIC FACTORY

TELE { GRAM "GEF" BANGALORE
PHONE 2046 GENERAL MANAGER
2651 OFFICE
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.

5th May 1941
Ref. 16131-34

Dear Sir,

It is proposed to hold the meeting of the Plastics Sub-Committee at 9 a.m. on Saturday the 10th instant at the Mysore Iron and Steel Works, Bhadravati.

Re subject as per personal wishes
Sk 5/5/41.

You are requested to attend.

Yours faithfully,
Sd V. Rama Rao.
CONVENOR,
Plastics Sub-Committee.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE
No. 321
Date 5/5/41

'A'
Sk 5/5/41
6/5

Encl. Nil
GER)

No. 16135 Copy of the above forwarded with Compliments to the Secretary, Industrial Research Board, Bangalore.

Sk 5/5/41 1) For wishes regarding 'A' Rama Rao Convenor.

Acknowledge 6/5 2) A reply is due to the Convenor of the S.C. Dear Head of Staff attended meeting 8/V

D.O. 640

8th May 1

Dear Mr. Rama Rau,

Refce: Your letter No.16131-34 dated 5th May.

I shall attend the Plastics Sub-Committee meeting on the 10th instant at Bhadravati.

Yours sincerely,

V. Rama Rau, Esq., B.Sc.,
Convener, Plastics Sub-Committee,
Government Electric Factory,
B a n g a l o r e.

HSR) Jh. O.A

The Complete file re: Plastics Sub Committee will be Subtd to Mr. Lees tomorrow, for perusal in the meeting

Lees)

Jh 8/5

GOVERNMENT ELECTRIC FACTORY

TELE { RAM "GEF" BANGALORE
PHONE 2046 GENERAL MANAGER
2651 OFFICE
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD.
BANGALORE CITY.

27th May 1941,

Ref G-17288

K. Parthasarathi, Esq., B.A.,
Secretary,
Industrial Research Board,
Bangalore.

Dear Sir,

Sub: Proceedings of the Third Meeting of the Plastics Sub Committee held on 10th May '41 at Bhadravati.

Please modify the Proceedings of the Plastics Sub Committee on page 2, para 1, lines 3 and 4 as follows:-

"Mr. Sastry requested Mr. Paul to show him detailed drawings with a view to ascertain whether the different parts of the formaldehyde plant had a balanced design".

Thanking you, I am,

Yours faithfully,

Convenor,
PLASTICS SUB COMMITTEE.

HSK.

PROCEEDINGS OF THE THIRD MEETING OF THE PLASTICS SUB-COMMITTEE HELD AT BHADRAVATI ON SATURDAY THE 10th ., INSTANT.

Present:-

Messrs:-

V.Rama Rao, Esq., B.Sc., Electrical Superintendent, Govt.Electric Factory, Mysore Road, (Convenor).
S.G.Sastry, Esq., B.A., M.Sc.,F.C.S., Director, Sandal-wood Oil Factory, Mysore.
V.Paul, Esq., M.Sc, Chemist, Mysore Iron & Steel Works, Bhadravati.

Absent:-

Messrs:-

M.Sreenivasayya, Esq., B.A., Department of Bio-Chemistry, Indian Institute of Science, Bangalore.
A.Mohamed Ali, Esq., B.Sc., Chemist, Mysore Iron & Steel works, Bhadravati.

Mr. K. Parthasarathi, Secretary, Industrial Research Board, Bangalore, was present by request.

The Members of the committee were taken round the Plant newly erected at Bhadravati for the manufacture of Bakelite Powder. Mr.V.Paul explained in detail the methods of manufacture and the duty performed by each machine.

Mr.S.G.Sastry and Mr.K.Parthasarathi wanted from Mr.Paul a comparative statement showing the strength of the articles moulded from ordinary Wood-Flour-Filled Powders and Sandalwood-Flour-Filled Powders.

Mr.V.Rama Rao then explained that for the manufacture of articles like Ash Trays, Cigerrate Bowls Etc., which would be used to contain cinders should be manufactured with Asbestos-filled Powders.

Mr.Paul was then requested to manufacture some powders with Asbestos-Fibre-Filled or Cotton-Fibre-Filled ones so that special articles needing higher strength and to be used with cinders may be manufactured out of them.

contd.

The Members of the Committee also inspected the plant being erected at Bhadravati for the manufacture of Formaldehyde. Mr.Sastry requested Mr.Paul to send him certain detailed drawings to find out the balance output of formaldehyde from this plant.

Regarding the samples of powder already sent from Bhadravati Mr.V.Rama Rao explained to the Committee that our powders were taking a longer curing time than the foreign imported powders. This was a serious draw-back as the cost of powder being the same for all the manufacturers, the Govt.Electric Factory would not be in a position to offer competitive prices if their production came down on account of longer curing time which necessarily meant higher costs of production.

Mr.Paul explained that he has now developed powders which had curing time nearly that of the imported powder. He further said that if the resins were manufactured by Two-Stage process, he could give the powders exactly in accordance to the imported ones.

Mr.Sastry then asked for the details of the Two-Stage-Process and during the discussion it was stated that unless the present people engaged at Bhadravati for the manufacture of resins, picked up sufficient experience it would be difficult to launch on the scheme of the manufacture of bakelite powder of quick curing properties as small temperature in variations grinding resins may make an entire batch very hard and render it almost useless for use. The committee also felt that the Electric Factory were taking a longer time to give the results on sample powders, sent by the Mysore Iron & Steel Works.

Mr.Parthasarathi then explained that the Govt. Electric Factory is essentially a manufacturing concern and the delay in giving the results was often due to either want of time or difficulties in releasing the machinery already on sales work. In all such cases, it was RESOLVED that whenever the fresh batch

Contd.

of powders were ~~mk~~ ready, whose properties had to be studied Mr.Paul was asked to get permission of the General Manager, Mysore Iron & Steel Works and go over to the Govt. Electric Factory where all facilities would be given to him to try the powder. This method not only would make the results available earlier but also give a scope to Mr.V.Paul to compare his powders to the quality of imported powders already in use at the Govt. Electric Factory. This procedure would give comparative tests of powders and would facilitate Mr.Paul to change the properties of the powder accordingly.

Mr.K.Parthasarathi requested Mr.Paul to go over to the Govt. Electric Factory with 20lbs. of Powder taken out from the existing stock of two Cwts at Bhadravati. The entire powder would be taken by the Govt.Electric Factorya after tests.

Mr.V.Rama Rao proposed that articles which had a smaller diameter but a comparatively larger height should be tried to find out the flowing properties as well as the curing time of Bhadravati Powder. Hitherto, the experiments conducted were only on flat moulds of a circular nature just like the Tumbler Trays. This would not reveal very much the flowing quality of the powder.

Regarding the tests for electrical strength, Mr.V.Rama Rao said that certain apparatus required for the test are being rigged up and the Mysore Iron & Steel Works will be immediately intimated when it is ready for test.

Next the Committee considered the subjects sent by Mr.V.Paul, copies of which were already circulated amongst the members of the committee. When the first subject regarding the containers was taken up, Messrs.K.Parthasarathi and S.G.Sastry said that ~~was~~ " The question of Containers do not arise immediately now as the entire quantity of powder that Bhadravati could manufacture would be taken over by the Government Electric Factory and the Containers already in use at the Govt.Electric Factory would be

Contd.

spared to the Mysore Iron & Steel Works for transport of powder. Mr.V.Rama Rao showed the Committee the sample of emergency packing used by the Foreign Manufacturers.

Before the next proposals were taken up for discussion, the Convenor read the letter from the Secretary, Industrial Reserarch Board, regarding the observation made by the Board,.

In view of this Mr.Paul was asked to definitely concentrate on perfecting the Phenol and Cresol Formaldehyde Powders before taking up the further problems.

Mr.Sastry then suggested that facilities were available and certain experiments could be conducted without prejudice to the manufacture of bakelite powders.

Then the next subject of manufacture of Laminated Sheets and Tubes required for the transformer Section of the Govt. Electric Factory was to be taken up. Mr.Paul was asked to give the Committee a scheme for the manufacture of these on a Laboratory scale which would be converted into a commercial one after necessary tests.

Mr.Sastry suggested that experiments on manufacture of Furfural resins may be taken up as this kind of resin was in great demand and he was asked to tackle this problem if possible at Mysore by Dr.Bhatnagar. Then Mr.V.Rama Rao explained that Mr.Paul was on his work during his stay at the Indian Institute of Science and he had also succeeded in making Furfurel Resins. The Technique and the equipment required for this is of a very simple nature.

The Committee discussed in detail the working up of a Digestor and Still required for this purpose. Mr.Paul was asked to send dimensions and drawings for fabrication at the Govt.Electric Factory.

The Committee RESOLVED to apply for a lump sum grant of Rs.750/- required for this purpose and details of the equipment

contd.

required would be sent to the Research Board in the due course of time(since appended with the letter of Mr.Paul.)

Mr. Sastry then acquainted the committee about certain experiments that were being conducted by Dr.Bhatnagar regarding the treating of Wood with Synthetic Resins and also Paper Laminated Boards impregnated with resins. The treatment of these materials with Synthetic Resins gave certain wonderful properties to the Wood and Paper rendering them useful as strong materials of construction. Mr.Sastry stressed that now that we have been able to manufacture resins, this problem has to be kept in view for the subsequent programme of the Committee as it was a very important one.

It was RESOLVED in the Committee, after discussion, that Laboratory Experiments also has to be pursued for the manufacture of Paraformaldehyde and Hexa-Methyline in view of their large demand in Medical Profession.

Then the Committee RESOLVED to hold the next meeting after getting the results of the powder manufactured at Bhadravati regarding its strength, curing properties etc.,

---

Bangalore.
D/17-5-41.
M.S.D.

Rama Rao
Convenor,
PLASTICS SUB COMMITTEE.

668/40-1

4th June 1

The Chairman,
Mysore Iron and Steel Works, etc.
Bangalore.

In enclosing herewith an extract from the proceedings of the Plastics Sub-Committee meeting held on 10th May 1941, I am directed to request you to be so good as to kindly arrange to conduct Laboratory experiments on the manufacture of Para-formaldehyde and Hexa-Methyline, at the Mysore Iron and Steel Works. I also request that the General Manager, Mysore Iron and Steel Works may kindly be instructed to keep the Board informed of the progress of work done at each important stage.

I have the honor to be,
Sir,
Your most obedient servant,

sd/-

Secretary.

"SR)3.

p.t.o.

1) Copy of the foregoing together with a copy of the extract from the proceedings of the Plastics Sub-Committee meeting are forwarded with compliments to the General Manager, Mysore Iron and Steel Works, Bhadravati forfavour of information and necessary action.

2) Copies with compliments to the Convener, Plastic Sub-Committee for information and necessary further action.

HSR)

Secretary.

Extract from the proceedings of the meeting of the Plastics Sub-Committee held on 10th May 1941 at Bhadravati.

X X X

X X

It was resolved in the Committee, after discussion, that laboratory experiments also has to be pursued for the manufacture of Paraformaldehyd and Hexa-Methyline in view of their large demand in Medical Profession.

X X X

"Extract"

Secretary,
Industrial Research Board,
Bangalore.

4th June

The Chairman,
Mysore Iron and Steel Works, etc.
Bangalore.

I am directed to inform you that the Plastics sub-committee in their

671/40-1

4th June 1

V. Rama Rau, Esq., B.Sc.,
Electrical Superintendent, Government Electric Factory, and
Convener, Plastics Sub-Committee
Bangalore.

Subject: Plastics Sub-Committee.

With reference to your letter No.16487 dated 13th May 1941 forwarding a copy of the proceedings of the meeting of the above sub-committee, I am directed to request you kindly to take necessary further action on the several resolutions in consultation with the General Manager, Mysore Iron and Steel Works, and to keep the Board informed of the progress of work done at each important stage.

I have the honor to be,
Sir,
Your most obedient servant,

SECRETARY

HSR

Do 76/41-2

15th August 1

Dear Mr. Visvanath,

It is proposed to issue a Bulletin, under the auspices of the Board of Scientific Research, on the work done and the success obtained on the manufacture of Plastics at the Mysore Iron & Steel Works, Bhadravati.

I shall be very much obliged by your letting me have a draft pamphlet for submission to the Chairman of the Board.

With best regards, I remain,

Yours sincerely,

B. Visvanath, Esq., B.E.,
General Manager,
Mysore Iron & Steel Works,
Bhadravati.

HSK.

C.F. 32 (a).

Department

From (Name) L.B.Green Esq., O.B.E.,

Designation Director of Industries and Commerce,

Station Madras.

Received Registered

To

The Secretary,
Industrial Research Board,
Bangalore.

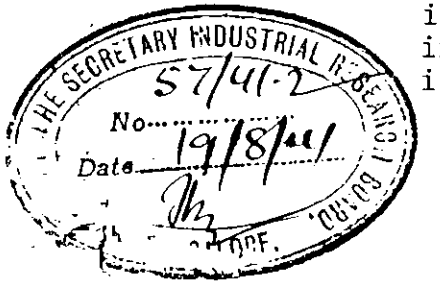
Enclosures:

No. 153-A/41 dated 12th August 1941

Sir.

Reference: Your letter No.285-3/40-1 dated 9th January 1941 - Formaldehyde.

So far as I have been able to ascertain the only concern which uses formaldehyde to any appreciable extent is the Buckingham and Carnatic Mills Ltd., which purchases about 40 tons at a time. Two of the local tanneries, viz. The Chrome Leather Co., Chromepet and Gordon Woodroffe and Co., Pallavaram occasionally purchase small quantities of the chemical in lots of ½ ton or 1 ton at a time. Accurate information in regard to the consumption cannot be given as the offtake is spasmodic.



Acknowledged 20/8

I have the honour to be
Sir,
Your most obedient servant,

for Director of Industries
and Commerce.

GOVERNMENT ELECTRIC FACTORY

TELE { GRAM "GEF" BANGALORE
PHONE 2046 GENERAL MANAGER
2651 OFFICE
CODE: A.B.C. 6TH EDITION.

MYSORE ROAD,
BANGALORE CITY.

10th Sept. 41

Ref. 3811

The Secretary,
Industrial Research Board,
Bangalore.

OFFICE OF THE MINISTER FOR LAW
SEP 11 1941
No. 2446

Dear Sir,

Please find herein enclosed a copy of the V Plastics Sub-Committee meeting held at Bhadravati at 9 A.M. on 3.9.1941.

Kindly acknowledge the receipt of enclosure.

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE.
No. 100/41-2
Date 10:9:41
Ack

Yours faithfully,

CONVENER,
PLASTICS SUB-COMMITTEE.

Acked 199

Encl: cbr.

1/9/41

Ou file

To be placed before the BB meeting on 15.9.41

Sd/-
Vice-chairman)

Discussed at the meeting on 15/9

chairman

11/9

OFFICE OF THE SECRETARY INDUSTRIAL RESEARCH BOARD BANGALORE.
No. 109/41-2
Date 13.9.41

109

MW. 10.9.41

13/9

PROCEEDINGS OF THE V PLASTICS SUB-COMMITTEE HELD AT BHADRAVATI ON 3RD SEPTEMBER 1941, AT 9 A.M.

Present:-

1. M. Venkatanaranappa, Esq., B.A.,
   Chairman, Mysore Iron & Steel Works, etc.,
   Bangalore.

2. E. V. Ganapati Iyer, Esq., B.Sc.,
   Government Director, Industrial Concerns,
   Bangalore.

3. S. G. Sastry, Esq., B.A., M.Sc.,F.C.S.,
   Director, Sandalwood Oil Factory,
   Mysore.

4. M. Sreenivasayya, Esq., B.A.,
   Department of Bio-Chemistry,
   Indian Institute of Science,
   Bangalore.

5. B. Visvanath, Esq.,B.E.,
   General Manager, Mysore Iron & Steel Works,
   Bhadravati.

6. V. Paul, Esq., M.Sc.,
   Chemist, Mysore Iron & Steel Works,
   Bhadravati.

7. A. Mohamed Ali, Esq., B.Sc.,
   Chemist, Mysore Iron & Steel Works,
   Bhadravati.

8. V. Rama Rao, Esq., B.Sc.,
   Electrical Superintendent,
   Government Electric Factory,
   Bangalore. (CONVENOR).

Mr. M. Venkatanaranappa presided over the Meeting.

The members of the Committee went round the Bakelite and the Formaldehyde Plants in the morning and had a preliminary discussion.

At present, the Mysore Iron & Steel Works ~~is~~ are producing about 60 lbs. of Bakelite Powder per day. The first batch of people that were being trained at Bhadravati for this work have picked up the work and the General Manager, Mysore Iron & Steel Works, was kind enough to give some more skilled labour required for this purpose. It is hoped

contd.

that from the 1st November '41 the Bakelite Plant at Bhadravati would be able to give 1.5 tons of powder per month. This would subsequently be raised to 2 tons per month from 1st January '42.

Mr. Venkatanaranappa wanted the Govt. Electric Factory to collect the specifications laid down for bakelite powders to be used for 1) moulding Electrical Articles, 2) moulding containers for medicines such as Ointment Containers, Brilliantine Containers etc., and 3) moulding bottle caps for different uses. He wanted also a comparative statement of ~~details~~ with regard to the powder made at Bhadravati and the imported ones.

Mr. M. Sreenivasayya promised to collect the specifications of various grades of bakelite powders for general use and Mr. V. Rama Rao to collect specifications of moulding powders for Electrical Articles. After a study of these specifications, it was RESOLVED that experiments should be directed to effect further improvements in the quality of the powder made at Bhadravati.

The Committee next considered ~~that~~ in view of the Govt. Electric Factory's use of Urea Formaldehyde Powders being on the increase, whether it was not possible to manufacture this type of powders also at Bhadravati. Mr. E.V. Ganapati Iyer, Government Director, Industrial Concerns informed the Committee that he had a discussion with Prof. Gosh, Director, Indian Institute of Science regarding the results of the experiments and the Experimental Plant at the Indian Institute of Science for the manufacture of Urea. He was opinion that the Experimental Plant may be got to Bhadravati from the Institute and worked.

Mr. M. Sreenivasayya informed the Committee that The Lac Research Institute at Ranchi were making Urea for their use and that this plant has a greater output than the Experimental one at the Indian Institute of Science. It was RESOLVED that Mr. M. Venkatanarana

contd.

would write to Mr. H.K. Sen of The Lac Research Institute at Ranchi asking him for details and requesting him if he could show the entire plant and the details of working it to one of the Chemists to be deputed. The Committee were of opinion that before the purchase of the Experimental Plant at the Institute for the manufacture of Urea, Mr. V. Paul of the Mysore Iron & Steel Works may be sent to the Indian Institute of Science to study the plant and also collect the literature from the Library of the Institute.

Next, the question of manufacture of Plastics from Coffee Beans referred to the Committee was taken up. The correspondence exchanged between Mr. S.G. Sastry and Sir. S.S. Bhatnagar was read out for the information of the Committee. The Committee found that the literature on the manufacture of Plastics from Coffee Beans was very meagre and most of the articles that had appeared were in News Papers and not in Technical Journals; as such, they did not give the scientific details of ~~costs~~, processes etc., involved in their manufacture.

Next, the Chemists at Bhadravati explained the work done on the manufacture of Plastics from Coffee Beans at their laboratory. Mr. M. Sreenivasayya was of opinion that the results were not conclusive yet and further experiments ~~had~~ have to be ~~done~~ undertaken as per his suggestions. The Chairman, Mysore Iron & Steel Works instructed the Chemists to take up the work immediately and inform the Committee about the results.

It was RESOLVED that the Committee may avail of the opportunity of the presence of Sir S.S. Bhatnagar at Bangalore about the 26th. of this month and have a discussion regarding the manufacture of Plastics from Coffee Beans.

Mr. S.G. Sastry wanted that ~~Dr.~~ Formaldehyde prepared at Bhadravati may be sent to the Industrial & Testing Laboratory for their opinion.

Rao Rao
CONVENOR,
PLASTICS SUB-COMMITTEE.

Bangalore.
D/10-9-41.
HSK.

7. Proceedings of the BOBBINS Sub-Committee meeting held on 16th August 1941.

8. Manufacture of Abrasive Papers on a semi-commercial scale—Report of the Special Sub-Committee.

9. Establishment of a permanent Industrial Museum at Imperial Capital. (As per U. O. file received from the Development Secretary on 13th September 1941).

10. Matters arising out of the proceedings of the SUPER PHOSPHATES Sub-Committee meeting held on 23rd February 1941.

11. Any other subjects brought forward by the Members :—

(*a*) Sandal Wood Oil Factory Branch at Shimoga.

(*b*) Manufacture of PLASTER OF PARIS.

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1. **Draft Revised Work Service Rules.**—The Draft Rules were examined by the Board in detail and certain modifications were recommended. A copy of the rules incorporating these modifications was handed over to the Development Secretary for submission to Government.

At this stage, the Government Director, Industrial Concerns, with the permission of the Chairman, left the meeting to attend to some other engagement.

2. **Constitution of and Expenditure relating to the Board.**—The subject was deferred for consideration at the next meeting.

3. **Grant of Dearness Allowance to Employees of Industrial Concerns.**—The Chairman stated that dearness allowance had been sanctioned to the monthly and daily rated staff of the Mysore Iron and Steel Works getting less than Rs. 25 a month with effect from 1st September 1941 till the end of December 1941. He also observed such allowances may be sanctioned to the employees of other concerns, obtaining sanction of Government.

4. **Investigations on the manufacture of Magnesite Bricks.**—The Chairman observed that these investigations are most advantageously pursued at the Mysore Iron and Steel Works, Bhadravati, and that the Government Director, Industrial Concerns, need not pursue these investigations at the Government Porcelain Factory.

5. **Proceedings of the Plastics Sub-Committee held on 3rd September 1941 at Bhadravati.**—The Proceedings of the meeting were read and recorded. It was resolved that further action might be taken on the resolutions of the Sub-Committee.

The Chairman, Mysore Iron and Steel Works, stated that the Supply Department wanted to know the quantity of Formaldehyde that the Iron Works could spare and the rate of supply, etc., and that he had written to Mr. M. A. Sreenivasan, Controller of Supplies, South India Circle, Madras, giving the details of their requirements. He stated that the rate of supply would naturally depend upon the quantity required by them, etc., and that he would promptly pursue the enquiry.

The Chairman suggested that the Government Director, Industrial Concerns, might also be kept informed of the developments.

With regard to the resolution of the Sub-Committee to avail of the opportunity of the presence of Sir S. S. Bhatnagar at Bangalore by about the 26th of this month and to have discussion regarding the manufacture of Plastics from Coffee Beans, the Chairman suggested that the Vice-Chairman might take further action in the matter.

6. **Investigations on the manufacture of Silkworm Gut.**—The interim report of the Director of Industries and Commerce on the subject was read. It was not clear from the report if the Superintendent of Sericulture had forwarded to the Senior Surgeon the details of cost of manufacture and other cognate matters referred to in his letter.

The Chairman observed that the matter was one of importance and that the Director of Industries and Commerce should immediately obtain the note on the

CONFIDENTIAL.

BOARD OF INDUSTRIAL PLANNING AND CO-ORDINATION.

PROCEEDINGS OF THE FIFTH MEETING OF THE BOARD HELD ON MONDAY THE 15TH SEPTEMBER 1941 AT 3 P. M. AT THE CHAMBERS OF THE MINISTER FOR LAW.

PRESENT.

1. *Rajasevaprasakta* A. V. Ramanathan, Esq., B.A.,
   Minister for Law. (*Chairman*).
2. M. Venkatanaranappa, Esq., B.A.,
   Chairman, Mysore Iron and Steel Works, etc., Bangalore.
   (*Vice-Chairman.*)

MEMBERS.

1. S. G. Sastry, Esq., B.A., M.Sc. (Lond.),
   Director, Sandalwood Oil Factory, Mysore.
2. E. V. Ganapati Iyer, Esq., B.Sc.,
   Government Director, Industrial Concerns, Bangalore.
3. V. Vedavyasacharya, Esq., B.A.,
   Secretary to Government, Development Department, Bangalore.

K. Parthasarathi, Esq., B.A.,
General Manager, Government Electric Factory, Bangalore.
(*Secretary.*)

ABSENT.

1. B. G. Appadurai Mudaliar, Esq., B.A., B.Sc., A.M.I., M.E.,
   Director of Industries and Commerce in Mysore, Bangalore.

(Letter expressing his inability to attend the meeting was received.)

Agenda.

1. Consideration of the "draft revised Work Service Rules" for all the Government Industrial Concerns in the State. (As per U. O. file received from the Development Secretary).

2. Constitution of and expenditure relating to the Board. (To be considered informally at the meeting as suggested by the Development Secretary.)

3. The grant of dearness allowance to monthly and daily rated staff of the Mysore Iron and Steel Works. (As per letter of the Development Secretary.)

4. To consider the proposals of the Government Director of Industrial Concerns, soliciting sanction of the Government for a special grant of Rs. 1,000 from Research Funds for investigations on the manufacture of MAGNESITE BRICKS in the Government Porcelain Factory. (As per letter No. D. 1331, dated 10th September 1941 from the Development Secretary.)

5. Proceedings of the PLASTICS Sub-Committee meeting held at Bhadravati on 3rd September 1941.

6. Investigations on the manufacture of SILK WORM GUT—Review of work done.

7. Proceedings of the BOBBINS Sub-Committee meeting held on 16th August 1941.

8. Manufacture of Abrasive Papers on a semi-commercial scale—Report of the Special Sub-Committee.

9. Establishment of a permanent Industrial Museum at Imperial Capital. (As per U. O. file received from the Development Secretary on 13th September 1941).

10. Matters arising out of the proceedings of the SUPER PHOSPHATES Sub-Committee meeting held on 23rd February 1941.

11. Any other subjects brought forward by the Members :—

(*a*) Sandal Wood Oil Factory Branch at Shimoga.

(*b*) Manufacture of PLASTER OF PARIS.

---

1. **Draft Revised Work Service Rules.**—The Draft Rules were examined by the Board in detail and certain modifications were recommended. A copy of the rules incorporating these modifications was handed over to the Development Secretary for submission to Government.

At this stage, the Government Director, Industrial Concerns, with the permission of the Chairman, left the meeting to attend to some other engagement.

2. **Constitution of and Expenditure relating to the Board.**—The subject was deferred for consideration at the next meeting.

3. **Grant of Dearness Allowance to Employees of Industrial Concerns.**—The Chairman stated that dearness allowance had been sanctioned to the monthly and daily rated staff of the Mysore Iron and Steel Works getting less than Rs. 25 a month with effect from 1st September 1941 till the end of December 1941. He also observed such allowances may be sanctioned to the employees of other concerns, obtaining sanction of Government.

4. **Investigations on the manufacture of Magnesite Bricks.**—The Chairman observed that these investigations are most advantageously pursued at the Mysore Iron and Steel Works, Bhadravati, and that the Government Director, Industrial Concerns, need not pursue these investigations at the Government Porcelain Factory.

5. **Proceedings of the Plastics Sub-Committee held on 3rd September 1941 at Bhadravati.**—The Proceedings of the meeting were read and recorded. It was resolved that further action might be taken on the resolutions of the Sub-Committee.

The Chairman, Mysore Iron and Steel Works, stated that the Supply Department wanted to know the quantity of Formaldehyde that the Iron Works could spare and the rate of supply, etc., and that he had written to Mr. M. A. Sreenivasan, Controller of Supplies, South India Circle, Madras, giving the details of their requirements. He stated that the rate of supply would naturally depend upon the quantity required by them, etc., and that he would promptly pursue the enquiry.

The Chairman suggested that the Government Director, Industrial Concerns, might also be kept informed of the developments.

With regard to the resolution of the Sub-Committee to avail of the opportunity of the presence of Sir S. S. Bhatnagar at Bangalore by about the 26th of this month and to have discussion regarding the manufacture of Plastics from Coffee Beans, the Chairman suggested that the Vice-Chairman might take further action in the matter.

6. **Investigations on the manufacture of Silkworm Gut.**—The interim report of the Director of Industries and Commerce on the subject was read. It was not clear from the report if the Superintendent of Sericulture had forwarded to the Senior Surgeon the details of cost of manufacture and other cognate matters referred to in his letter.

The Chairman observed that the matter was one of importance and that the Director of Industries and Commerce should immediately obtain the note on the

cost of manufacture, etc., and should take further action expeditiously. He also remarked that the progress was too slack.

7. **Manufacture of Bobbins, Shuttles, etc.**—The proceedings of the meeting of the Sub-committee held on 16th August 1941 was read and recorded.

Since the investigations were in progress, it was resolved that further report might be awaited and that the investigations should, however, be pursued expeditiously.

8. **Manufacture of Abrasive Papers on a Semi-commercial Scale.**—At the meeting of the Board on the 5th instant, a Special Sub-Committee had been constituted to examine the scheme of Mr. P. S. Narayan on the manufacture of Abrasive Papers on a commercial scale, using the results of his investigations. The report of the Sub-Committee was recorded, and the same was handed over to Mr. S. G. Sastry for definite further action on alternative lines, suggested at the meeting.

9. **Establishment of a permanent Industrial Museum at Imperial Capital.**—The Chairman stated that since both the Director of Industries and Commerce and the Government Director, Industrial Concerns, were not present at the meeting, the subject might be deferred for further consideration and that an interim reply might be sent to the Residency, by the Development Secretary, if necessary.

10. **Matters arising out of the proceedings of the Super Phosphates Sub-Committee meeting held on 23rd February 1941.**—The Sub-Committee had recommended the manufacture of Super Phosphates, investigations on Double Supers, Solubilisation of Rock Phosphate and manufacture of Hydrogen Peroxide.

(*a*) **Solubilisation of Rock Phosphate.**—The Chairman observed that it was desirable that the Government Director should interview Dr. J. C. Ghosh immediately and ascertain from him the information required on the solubilisation of Rock Phosphate and pursue the investigations as expeditiously as possible.

(*b*) **Manufacture of Hydrogen Peroxide.**—The Chairman, Mysore Iron and Steel Works, stated that the Mysore Chemical Manufactures, Ltd., have not been manufacturing this chemical at present. He suggested to ascertain from Mr. M. O. Krishnaswamy of the Mysore Chemical Manufactures, Ltd., the reasons for their having stopped the manufacture of this chemical. It has subsequently been ascertained that the liquid would not continue stable and that some explosion occurred. The Company did not pursue the question further.

The Chairman observed that Mr. S. G. Sastry might pursue the matter and submit specific proposals regarding the manufacture of Hydrogen Peroxide. He also pointed out that all subjects of a chemical nature should be referred to Mr. S. G. Sastry and he should be responsible to advise the Board on these matters.

OTHER SUBJECTS.

11. (*a*) **Sandalwood Oil Factory Branch at Shimoga.**—The proposal to start a Branch Factory at Shimoga consisting of four stills to distil chiltas was RECORDED. It was noted that only crude oil would be distilled at Shimoga and transported to Mysore Sandlwood Oil Factory for purification, etc.

(*b*) **Manufacture of Plaster of Paris.**—The Chairman, Mysore Iron and Steel Works, stated that the experimental batch of Plaster of Paris prepared at Mysore Iron and Steel Works, Bhadravati, by Mr. Chintopant was reported by the Senior Surgeon to be good.

It was RESOLVED that the Government Porcelain Factory should proceed further with its manufacture by calcining Gypsum on lines adopted by Mr. Chintopant at Bhadravati, in view of the favourable opinion given by the Senior Surgeon.

The Chairman desired that the next meeting should be held at **Mysore on Monday the 6th October 1941 at 8-30 a. m. at his residence.**

K. PARTHASARATHI,
Secretary.

A. V. RAMANATHAN,
Chairman.

WD 2840—GPB—100—27-9-41

(Board of Industrial Planning and Coordination)

24th September 1

303/411.2

V. Rama Rau, Esq., B.Sc.,
Electrical Superintendent,
and Convener, Plastics Sub-
Committee, Bangalore.

I am directed to inform you that the proceedings of the Plastics Sub-Committee meeting held on the 3rd instant was recorded.

I am to request you kindly to take necessary further action on the resolutions of the Sub-Committee, and to send periodical progress reports for the information of the Board.

I have the honor to be,
Sir,
Your most obedient servant,

Secretary.

(Board of Industrial Planning and Coordination)

1st Octr. 1

V. Rama Rao, Esq., B.Sc.,
Electrical Superintendent,
and Convener, Plastics Sub-committee,
Govt. Electric Factory, Bangalore.

As resolved by the Plastics Sub-committee at its meeting held on the 3rd ultimo and approved by the Board, I am directed to request you kindly to arrange to collect the specifications laid down for bakelite powders to be used for 1)moulding electrical articles, 2)moulding containers for medicines, 3)moulding bottle caps for different uses, for the reference of the committee.

A comparative statement of tests and other data with regard to the powder manufactured at Bhadravati and the imported ones may also be obtained from the Mysore Iron and Steel Works, for further consideration of the Sub-committee.

Since the Board meetings are regularly held every fortnight, hereafter, it is specially requested that you may kindly arrange to forward, in consultation with

p.t.o.

with the Mysore Iron and Steel Works, progress reports on the action taken on the resolutions of the committee, for the information of the Board

I have the honor to be,
Sir,
Your most obedient servant,

Sd/-
Secretary.

No. /41-3

Copy of the above is forwarded with compliments to the General Manager, Mysore Iron and Steel Works, Bhadravati, for favour of information.

Secretary

(Board of Industrial Planning and Coordination)

1st Octr. 1

The General Manager,
Mysore Iron and Steel Works,
Bhadravati.

Sub: Formaldehyde.

As recommended by the Plastics Sub-committee, and in accordance with the resolutions of the Board I am directed to request you to be so good as to arrange to send a representative sample of Formaldehyde prepared at the Works, to the Government Industrial & Testing Laboratory, Bangalore for opinion.

Please also intimate if laboratory experiments are in progress re: the manufacture of paraformaldehyde and Hexa Methyline, required by the medical profession.

A copy of this letter is also sent to the Conveyor

p.t.o.

Convenor, Plastics Sub-committee for information and necessary further action.

I have the honor to be,
Sir,
Your most obedient servant,

Sd/-

Secretary.

Copy of the above is forwarded with compliments to V.Rama Rao,Esq.,B.Sc., Convenor, Plastics Sub-committee for information and necessary further action.

Sd/-

Secretary.

Copies with compliments to the Government Director, Industrial Concerns, Bangalore for favour of information with a request that the Industrial and Testing Laboratory may kindly be instructed to conduct trials and to furnish opinion in the matter.

Secretary.

(Board of Industrial Planning and Coordination)

13th October 1

484/41-2

The Chairman,
Mysore Iron and Steel Works, etc.,
Bangalore.

Subject: Formaldehyde.

In inviting a kind reference to page 2 para 5 of the printed proceedings of the Board meeting held on 15.9.41, I am directed to request you to be so good as to favour the Board by intimating the final result of the enquiry of the Supply Department re: Formaldehyde supplies. As suggested by the Chairman, the Government Director, Industrial Concerns, might also be kept informed of the developments.

I have the honor to be,
Sir,
Your most obedient servant,

Sd/-
Secretary.

p.t.o.

No. 40574(2)

Copy of the foregoing is forwarded with compliments to the Government Director, Industrial Concerns, Bangalore for favour of information.

Secretary.

Board of Industrial Planning & Coordination.

Subject: A short note on the progress of work in the manufacture of formaldehyde, Hexamine, electrolytic cells etc.

Formaldehyde.

(As per letter received from the Mysore Iron & Steel Works).

As recommended by the Plastics sub-committee, representative sample of one pound of formalin 40 percent technical grade prepared at the Mysore Iron and Steel Works was sent by the Works to the Industrial and Testing Laboratory for trial and report. Report from the Industrial and Testing Laboratory is awaited.

The Sales Officer, Mysore Iron and Steel Works reports that experiments are in progress at their Laboratory to manufacture "Paraformaldehyde" and "Hexamine" of pure quality (as recommended by the Plastics sub-committee) required by medical profession, and that samples would shortly be sent to the Industrial and Testing Laboratory for trial.

Electrolytic Cells.

This subject had been referred to Graphite Electrodes sub-committee for investigation and report.

Extract from the report received from Dr. Ram Prasad, convener of the sub-committee is noted below for information.

x x x x

I discussed the matter again with the Chairman of the Mysore Iron and Steel Works, who has promised to discuss the matter with the staff of the Iron and Steel Works who are working on graphite electrode investigation and let me know what further action can be taken.

However, in the meantime, I shall arrange for a meeting of the sub-committee and get their views in the matter."

Further report from the convener is awaited.

Bangalore,
Dated, 14th Octr. 41

Secretary.

THE MYSORE IRON & STEEL WORKS,

(GOVERNMENT OF MYSORE)

TELEGRAPHIC ADDRESS
'MYSIRON' BHADRAVATI
CODES:
BENTLEY'S
WESTERN UNION FIVE LETTER
A. B. C. 6TH EDITION

BHADRAVATI. (INDIA)

Ref: No .....

58/14

INDUSTRIAL RESEARCH BOARD OFFICE BANGALORE
No. 154/41-2
Date 8/10/41

6th October, 1941.

The Secretary,
Industrial Research Board,
BANGALORE.

Dear Sir,

Formaldehyde.

As desired in your letter No.361/41-42 of the 1st instant, we are arranging to send one pound free sample of our formalin 40% Technical grade, to the Govt. Industrial and Testing Laboratory, Bangalore.

Regarding paraformaldehyde and Hexamine, we beg to state that experiments are in progress in our laboratory for making pure quality of these and the suitability for medical profession has not yet been tested. We shall shortly send samples of these also to the Govt.Industrial and Testing Laboratory for trial.

Yours faithfully,
For the Mysore Iron & Steel Works,

SALES MANAGER.

Copy to:The Govt.Industrial and Testing Laboratory,
MALLESWARAM P.O.(BANGALORE).

msr:

Telegrams "MYSIRON" Bhadravati.

THE MYSORE IRON & STEEL WORKS,

(GOVERNMENT OF MYSORE)

BHADRAVATI,
(MYSORE STATE RY.)

Reference No. 6372

Date 18-10-1941

Messrs The Govt: Industrial & Testing Laboratory
Malleswaram P.O.
Bangalore

Dear Sirs, Awaiting Your letter No. 5814 & 6-10-41

Please receive the following goods despatched to Bangalore *Cantt per* R.R. P.W.B *No* 28 *dated* 18-10-41 *freight* PAID TO PAY *Rs.* 0-7-0 *and acknowledge the enclosures*

Encl:—R. R. (1 no)
Bill.

Yours faithfully,
For The Mysore Iron & Steel Works
P.N. Gopalan

PARTICULARS.

Wagon No	Material	Quantity.	Marks
	One D/W case Containing one 4th of Formaldehyde in a bottle.		

File
D3
29/X

OFFICE OF THE SECRETARY INDUSTRIAL R. & T. BANGALORE. No. 174/41-2 Date 29/X/41

Copy to The Secretary
Industrial Research Board,
Bangalore.

Subject no. 8

Board of Industrial Planning & Coordination.

Subject: A short note on the progress of work re: investigations on the manufacture of Formaldehyde, Hexamine etc.

Formaldehyde.

(As per letter received from the Mysore Iron & Steel Works).

As recommended by the Plastics Sub-Committee, a representative sample of one pound of formalin 40 percent technical grade prepared at the Mysore Iron and Steel Works was sent by the Works to the Industrial & Testing Laboratory for trial and report. Report from the Industrial and Testing Laboratory is awaited.

The Sales Officer, Mysore Iron and Steel Works also reports that experiments are in progress at their Laboratory to manufacture "Paraformaldehyde" and "Hexamine" of pure quality (as recommended by the Plastics Sub-Committee) required by the Medical Profession, and that samples would shortly be sent to the Industrial and Testing Laboratory for trial.

Electrolytic Cells.

This subject had been referred to the Graphite Electrodes Sub-Committee for investigation and report.

Extract from the report received from Dr.Ram Prasad, Convenor of the Sub-Committee is noted below for information.

"x x x x

I discussed the matter again with the Chairman of the Mysore Iron and Steel Works, who has promised to discuss the matter with the staff of the Iron and Steel Works who are working on Graphite Electrodes investigation and let me know what further action can be taken.

However, in the meantime, I shall arrange for a meeting of the Sub-Committee and get their views in the matter."

Further letter from the Convenor (vide letter dated 14.10.41)

"A meeting of the Sub-Committee to consider the local manufacture of electrolytic cells will be convened after the 28th instant in consultation with the Authorities of the Mysore Iron and Steel Works".

Futher report is awaited.

Secretary.

Bangalore,
Dated, 16th Octr.1941.

Received
20/10/41

I. R. B. 6]

SUBJECT Jamal delegate.

2 Drafts
in office

Dated 4/7

Date of issue 4/7

Signed by

No.

To

The General Manager
M. J. S. W.
Bhadrawati

Sir,

In inviting a
kind reference to
your letter No. 5814 dated
6.10.1941, on the
subject, I am
directed to request you
to ~~be so good~~ kindly
intimate if you have
since heard from the
D.T.O. and if so a
copy of the report received
may kindly be forwarded
~~I am to request~~
~~you further~~

P.T.O.

I am also
asked to enquire if
the above as to the present
stage of the experiments
in progress re:
Paraformaldehyde &
Hexamine & refer to
in your Para 2 of
your letter under
advertance

An early reply is
requested

Yrs

[illegible]
30/6/42
Secy

[illegible]
30/6/42

List of enclosure.

1) Copy W. to Gas Dir
for view of action with a
view to issue instns to
the D.T.L. to expedite
the final trials & the
report on the Sample of
Impregnated Textile Fabric
if not already done.

2) Copy to
Chairman, Plastics
Sub Committee
for info

[illegible]
30/6/42
Secy

Copied by

Examined by

[illegible]
30/6

Secy

WD 01343—GPB—750—4/41

I. R. B. 6]

SUBJECT Minutes of the Sub-Committee Meeting held on 3.9.41

Immediate

No.

To V. Rama Rao Esq Bar-at-Law
Convener, Plastics
Sub-Committee
ft 7

Date of issue ..

Signed by

SIR,

In continuation of reference to letter No. 389/41.2 dated 1.10.41 on the subject, I am directed to request you to kindly intimate the action taken in the matter and to enquire if any further meetings of the Sub-Committee have been held so far to consider the proceedings

of the meeting. Heavy
may kindly be forwarded
immediately.

Sd/-
for Major
Sec'y.

Copy forwarded: Message
M.S.No for information
& necessary further
action in connection
with Govt. Memo
No 3360/(1)/3 Dated
1.10.41

"Any up to date
report on the
investigations & the latest
position in the case of
Plastics and further steps
thereof in progress, may
kindly be intimated."

List of enclosure.

Copied by

Examined by

for Major
Sec'y

WD 01343—GPB—750—4-1-41

Sd/- 3/6

JP. 11/42-3

3rd July 1942

The General Manager, Mysore Iron and Steel Works,
Bhadravati.

In inviting kind reference to your letter No.5814 dated 6th October 1941, on the subject, I am directed to request you to kindly intimate if you have since heard from the Industrial & Testing Laboratory and if so a copy of the report may kindly be forwarded.

I am also to enquire about the present stage of the experiments in progress re: paraformaldehyde and Hexamine referred to in para 2 of your letter under advertance.

An early reply is requested.

I have the honor to be,
Sir,
Your most obedient servant,

sd.T. Shamanna.

Secretary.

p.t.o.

No.I.P. /2 /42-3, dated 3rd July 1942.

Copy of the foregoing is forwarded with compliments t(

1) The Government Director, Industrial Concerns, Bangalore for favour of information, with a request to issue instructions to the Industrial & Testing Laborato to expedite the forwardal of the report on the samples of Formalin sent by the Iron Works, if not already done

2) The Convenor, Plastics Sub-Committee, Govern-ment Electric Factory, Bangalore for information.

Secretary.

I.I. 12/423

3rd July 1942

V.Rama Rao,Esq.,B.Sc.,
Electrical Superintendent & Convenor, Plastics
Sub-Committee, Government Electric Factory
Bangalore.

Subject: Minutes of the Plastics Sub-Committee meeting held on 3.9.1941.

In inviting kind reference to letter No.359/41-2 dated 1st October 1941, on the subject, I am directed to request you to kindly intimate the action taken in the matter and to enquire if any further meetings of the Sub-Committee have since been held and if so copies of the Proceedings of the meetings thereof may kindly be forwarded immediately.

I have the honor to be,
Sir,
Your most obedient servant,

sd. T. Shamanna.

Secretary.

p.t.o.

No.I.P. 14 /42-3 dated 30 July 1942.

Copy of the foregoing is forwarded with compliments to the General Manager, Mysore Iron and Steel Works, Bhadravati for information and necessary further action in continuation of this office letter No.360/41-2 dated 1.10.1941. .

The latest position in the manufacture of plastics and further experiments thereof in progress may kindly be intimated.

Secretary.

Telegrams "MYSIRON" Bhadravati.

THE MYSORE IRON & STEEL WORKS,

(GOVERNMENT OF MYSORE)

BHADRAVATI.
(MYSORE STATE RY.)

Reference No. /

Date 19-7-194

Messrs Govt. Industrial & Testing Laboratory, Malleswaram P.O. Bangalore

DEAR SIR/S, At the request of the Board of Industrial Planning & Coordination

Please receive the following goods despatched to Bangalore City as per R.R. / P.W.B. No. 54 dated 18/7/42 freight PAID / TO PAY Rs. 0-7-0 and acknowledge the enclosures.

Encl:- R. R. — one
Bill

SECRETARY,
BOARD OF INDUSTRIAL
PLANNING & COORDINATION.
JUL 20 1942
No. 39/423 Tech

Yours faithfully,
for The Mysore Iron & Steel Works,
Subramanya
Sales Manager

PARTICULARS.

WAGON NO.		QUANTITY	MARKS
	One Dw. Case Containing Samples of- 1) Hexamine, Pure quality 2) " , Technical " 3) Para formal dehyde for test. Kindly let us have your report.		

Copy to The Secretary, Board of Industrial Planning & Co-ordination, S. R. S, Bangalore.

Subject No. 29 & 30.

THE MYSORE IRON & STEEL WORKS
(GOVERNMENT OF MYSORE)

Telegraphic Address:
"MYSIRON" BHADRAVATI
CODES:
BENTLEY'S
WESTERN UNION FIVE LETTER
A. B. C. 6TH EDITION

Ref. G. 37

BHADRAVATI
(MYSORE STATE RAILWAY)
India

18th July 1942.

SECRETARY.
BOARD OF INDUSTRIAL
PLANNING & COORDINATION.
JUL 20 1942
No 41/42-3

The Secretary,
Board of Industrial Planning & Co-ordination,
Public Offices,
BANGALORE.

Dear Sir,

With reference to your Memo No. I.P. 14/42-3 of 3-7-1942 forwarding a copy of letter of even date addressed to the Convenor Plastics Sub Committee, Bangalore, we enclose herewith for your information a note containing information about the latest position in the manufacture of Plastics and further experiments in progress.

Yours faithfully,
for THE MYSORE IRON AND STEEL WORKS,

Manager

General Manager.

Enc:

CRS:

THE MYSORE IRON & STEEL WORKS
BHADRAVATI

Manufacture of Plastics at the Mysore
Iron and Steel Works, Bhadravati.

---

1. Manufacture of Bakelite powder is now stopped due to shortage of Phenol - New supplies of Phenol ~~is~~ are expected within a few weeks.

2. Furfural Plant is nearing completion and will be ready for trial operation within a short time.

3. Small Urea Plant brought from Indian Institute of Science is being worked to collect operation data.

4. Arrangements are being made to collect additional equipments required to make Urea plastics.

5. Experimehts on coffee plastics are being continued.

Vishwanath
General Manager.

Bhadravati,
18th July 1942.

CRS/2:

The Works will not be in any way liable for non-performance either in whole or in part of any contract for any delay in performance thereof in consequence of strikes, shortage of labour, breakdown or accident to machinery or other accidents of whatever nature, failure on the part of the Railway Company to supply sufficient wagons to carry essential raw materials to and finished products from the Works and all causes of whatever nature beyond the Works' control.

THE MYSORE IRON & STEEL WORKS,

(GOVERNMENT OF MYSORE)

TELEGRAPHIC ADDRESS:
"MYSIRON" BHADRAVATI

CODES:
BENTLEY'S –
WESTERN UNION FIVE LETTER
A. B. C. 6TH EDITION.

SECRETARIAT
PLANNING & COORDINATION
JUL 22 1942
No. 46/42-3

BHADRAVATI
(MYSORE STATE RAILWAY)
INDIA.

Ref. S. [illegible]

20th July, 1942.

Manufacturers of:-
CHARCOAL PIG IRON IN 7 GRADES
CAST IRON PIPES 2" TO 33" DR.
ROLLED MILD STEEL BARS & RODS
LIGHT STRUCTURES
ANGLES
GENERAL CASTINGS
METHANOL
C. P.
DENATURING
METHYL ACETONE
ACETATE OF LIME
HARD WOOD TAR AND PITCH
WOOD PRESERVATIVE
BLACK PAINT
KRESO
(DISINFECTANT)
"CHAMUNDI" BRAND
PORTLAND CEMENT

The Secretary,
Board of Industrial Planning
and Coordination,
General & Revenue Secretariat,
BANGALORE.

Dear Sir,

With reference to your letter No.I/P-11/42-3 of the 3rd instant, we enclose herewith a copy of the analytical report on our Formaldehyde.

Regarding Paraformaldehyde and Hexamine, we have already despatched to the Government Industrial and Testing Laboratory samples of these for test.

We understand that Hexamine is used only in small quantities for medicinal purposes and paraformaldehyde much less. We are at present making small quantities of these in our Laboratory. As our shops are very busy, it has not been possible for us to get ready the full equipment for the manufacture of these chemicals on a large scale. Should there be a great demand, we can arrange for the installation of the equipment at an early date.

Yours faithfully,
For the Mysore Iron & Steel Works,

SALES MANAGER.

Encl: One.
P.T.O.
July

Copy to: The Government Industrial and Testing Laboratory, MALLESWARAM P.O. Bangalore.

msr;

THE MYSORE IRON AND STEEL WORKS
BHADRAVATI

ANALYTICAL REPORT.

Sample: Formaldehyde 40% Technical grade from the Mysore Iron & Steel Works, Bhadravati, received on 18-10-41.

To determine: B.P. Tests and assay.

Constitutent.	Found.	Standard.
1) Colour.	Pale Yellow.	B.P. = Colourless.
2) Specific gravity.	1.084	1.08 - 1.095
3) Formaldehyde.	42.13% w/v (38.84 w/w)	37 - 41% w/v

Remarks: The sample contains some dirt.

Sd/-
Chief Chemist I/C
Indl. & Testing Laboratory.

Bhadravati,
20th July 1942.
July

I.P. 69/42-3 6th August 1942.

The General Manager,
Mysore Iron and Steel Works, Bhadravti.

Re: Formaldehyde.

With reference to your letter No.S.1211 dated 20th July 1942, forwarding a copy of the test report on the Formaldehyde manufactured at Bhadravati, I am directed to request you to be so good as to arrange to continue the experimental investigations and bring up the production to B.P. Standard.

I am to add that the test reports of the Industrial and Testing Laboratory regarding paraformaldehyde and Hexamine may be awaited before any further action is taken in the matter. A copy of the report together with your remarks may kindly be sent.

I have the honor to be,
Sir,
Your most obedient servant,

For 6/8/42

Secretary.

TELEGRAMS: 'G.E.F.'

TELEPHONE: 2046

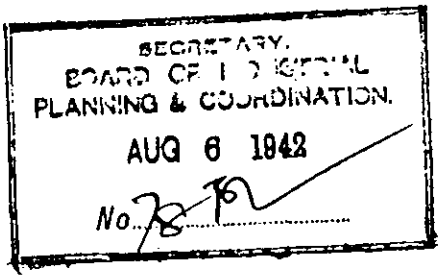
V. RAMA RAO, ESQ., B.Sc.
Elecl. SUPERINTENDENT

GOVERNMENT ELECTRIC FACTORY
MYSORE ROAD

D.O. No.

Bangalore, 5th August. 19 42.

The Secretary,
Board of Industrial Planning
& Co-ordination,
Public Offices,
Bangalore.



Dear Sir,

Sub: Progress Report regarding the manufacture of Plastics.

I am herewith enclosing a copy of the report received by me from The Mysore Iron & Steel Works, Bhadravati, wherein the progress is recorded.

Subbs
This report for the Commerce
Plastics sub-Committee

Yours faithfully,

Rama Rao

6/8/42

VR/HSK.

Encl: One.

GOVERNMENT ELECTRIC FACTORY.

THE MYSORE IRON & STEEL WORKS.
Bhadravati.

1. Manufacture of Bakelite:- The work is at a stand still for want of a raw material, Phenol. Supplies are however expected soon.

2. Manufacture of Urea:- Trial experiments with the small plant purchased from the Indian Institute of Science are being conducted. An estimate for a one hundred-weight plant has been sanctioned and the fabrication of the Plant has been taken up.

3. Manufacture of Furfural:- The pilot plant is just ready for test and trial operations will be taken up soon.

4. Manufacture of Urea formaldehyde Moulding Powders:- Some additions to the pilot Bakelite plant are necessary to adopt it to the manufacture of Urea formaldehyde moulding powders. An estimate for additional units is sanctioned and fabrication has been taken up. Manufacture will be taken up when urea becomes available.

5. Coffee plastics:- Investigations are being continued but so far no satisfactory moulding powder has resulted. It is possible that Brazilian coffee may be more suitable for this purpose, a sample of which is being obtained for comparison with our coffee.

6. Other substitute moulding powders:- A black moulding powder has been developed from materials all of which are locally available. A sample has been sent to the Government Electric Factory for trial and test.

Sd/- Mohamad Ali.
1-8-1942.

Bhadravati.
1st August 1942.

Sd/- B. Viswanath.
General Manager.

"True Copy"

Bangalore,
D/5-8-42. HSK

Subjects 27, 29, 30 & 32

THE MYSORE IRON & STEEL WORKS

(GOVERNMENT OF MYSORE)

SECRETARY.
BOARD OF INDUSTRIAL
PLANNING & CO-ORDINATION.
SEP 15 1942
No. 130

TELEGRAPHIC ADDRESS:
'MYSIRON', BHADRAVATI
CODES:
BENTLEY'S
WESTERN UNION FIVE LETTER
A.B.C. 6TH EDITION

BHADRAVATI (INDIA)
12th September 1942.

Ref. No. G/1223

The Secretary,
Board of Industrial Planning
and Co-ordination,
BANGALORE.

Dear Sir,

With reference to your letter No.I.P.139 dated 10th September 1942, we note below the latest position on each of the following subjects referred to in your letter:

Subject No. 27

1) Hydrogen peroxide - The investigation in regard to the manufacture of Hydrogen peroxide has been dropped for want of necessary facilities on the Works.

Subject No. 29.

2) Furfural - experiments - The plant is ready for trial operation, but due to the labour strike, the work could not be started.

Subject No. 30

3) Plastics - (a) A new plastic from locally available materials, has been developed and a sample has been sent to the Government Electric Factory for test and report.

b) Urea Plastics - Arrangements to collect equipment for making Urea Plastics are in progress.

Subject No. 32 -- Other Subjects

New investigations - Hydrofluoric acid is being

prepared on a small scale to meet the local demand.

Yours faithfully,
for THE MYSORE IRON AND STEEL WORKS,

Viswanath

General Manager.

BSL/

I.P.245/42-3

Camp - Mysore, 16th October 2

The General Manager, Mysore Iron and Steel Works,
Bhadravati.

Manufacture of Plastics.

15th September 1942

"The report of the General Manager, Mysore Iron and Steel Works stating that a new plastic from locally available materials had been developed and that sample had been sent to the Government Electric Factory for test and report was read and recorded. Further report was awaited. It was also noted that further work regarding urea plastics was in progress."

F. 6/10/42

Sec'y.

B. I. C.-2]

No. 185

Encl. 4 pages.

BOARD OF INDUSTRIES & COMMERCE.

Bangalore, dated 23rd March *194* 3.

From N.V. Siddalingappa, Esq., M.Sc.,
Secretary, Board of Industries & Commerce,
BANGALORE.

To

V. Vedavyasacharya, Esq., B.A.,
Secretary to the Government of Mysore,
Development Department, Bangalore.

Sir,

Manufacture of moulded articles.

I am directed to send herewith copy of the proceedings of the meeting of the Plastics Sub Committee held on 26th February 1943 together with copies of notes referred to therein for the information of Government.

I have the honour to be,
Sir,
Your most obedient servant,

N.V. Siddalingappa

Secretary.

Proceedings of the Plastics Sub Committee held on 26th February 1943 at 10 A.M. in the presmises of the Government Electric Factory, Bangalore.

P r e s e n t.

1. E. V. Ganapathi Iyer, Esq., B,Sc.,
   Government Director, Industrial Concerns,
   Bangalore.

2. B. Visvanath,Esq.,B.E.,
   General Manager, Mysore Iron and Steel Works,
   Bhadravati.

3. B.H. Krishna, Esq., M.Sc.,A.I.E.,A.I.I.Sc.,
   General Manager, Government Industrial and
   Testing Laboratory, Bangalore.

4. Dr. K.L. Ramaswamy,D.Sc.,M.Sc.,A.I.I.Sc.,
   Works Superintendent,Mysore Chemicals and
   Fertilisers,Ltd.,Mysore.

5. P.R. Balakrishna, Esq.,B.A.,
   General Manager, Mysore Sugar Co.,Ltd.,
   Mandya.

6. Dr. B.Sanjeeva Rao,M.A.,Ph.D.(Lond),
   Professor of Chemistry,Central College,
   Bangalore.

7. V. Paul, Esq.,
   Chemist, Mysore Iron and Steel Works,
   Bhadravati.

8. Dr. Aswathanarain Rao,D.Sc.,
   Research Officer, Mysore Iron and Steel Works,
   Bhadravati.

9. K.S.H. Rao, Esq.,B.A.,B.E.,
   General Manager, Government Electric Factory,
   Bangalore.

A b s e n t.

1. Lokasevasakta
   Mr. B.K. Garudachar,
   Bangalore City.

2. S.G. Sastry, Esq.,B.A.,M.Sc.,F.C.S.,
   Retired Director of Industries and Commerce,
   Bangalore.

I. The Committee pursued consideration of the Subject from the Proceedings of the last meeting. Copies of the notes furnished (1) by Mr. V. Paul, working out the estimated costs of production of

(a) Formaldehyde and
(b) Moulding powders

and (2) by the General Manager, Government Electric Factory of costs of manufacturing moulded articles and the margin of profits between costs of production and selling prices anticipated financial results and Capital estimates of the scheme were made available to the members and were consi-

considered in detail. Copies of these costs are appended to the Proceedings.

II. The Committee strongly feel that the production of Plastics in the form of Moulding Powders must be increased in Mysore immediately to any extent possible with a minimum output of 300 tons per year, which is the capacity of the Government Electric Factory alone. The demands of other manufacturers of moulded products would also be very large.

The Committee understand that the present production of Methyl Alcohol at Bhadravati is limited to 1,900 gallons per month and that the output of Formalin atBhadravati even with the duplication of the Formaldehyde plant taken up will be 150 tons of Moulding Powders per year.

III. The Committee recommend, therefore, that the Mysore Iron and Steel Works, Bhadravati, obtain and instal immediately an additional unit of Formaldehyde plant with a capacity of one ton per ~~year~~ day. This is the smallest economic size for the production of Formaldehyde of a modern design plant calculated to give high efficiency. At the same time, there will be provision ~~of~~ for standby capacity and some expan-sion of production. As ready-made units for both Formaldehyde and Urea manufacture are understood to be not avail-able but could only be fabricated against designs to speci-fic requirements, the Committee recommend that they may be specially designed and obtained through reputed firms of chemical Engineers, like the Chemical Construction Corporation of New York or the Du-Peat-de Neacurs Co. of U.S.A. and that the help of the Government of India be obtained for getting priority and securing the equipment if possible under Lease/Lend arrangement. For Urea also a one ton capacity Plant will be adequate.

IV. The location of the place for Formaldehyde manufacture was further considered. In modification of the resultion passed at the last meeting it was agreed that as the manufacture of Formaldehyde will be more economical at Bhadravati than at Bangalore or any other centre and the Mysore Iron and Steel Works are in a better position to put up Formaldehyde plants quickly, Formaldehyde manufacture be taken by the Mysore Iron and Steel Works and the material supplied to the new Plastics concern on contract on a cost plus basis for a minimum periodof 10 years.

V. The estimates furnished by Mr. V.Paul and the General Manager, Government Electric Factory regarding capital, working costs of production and anticipated financial results of the manufacture of moulding powders and finished products were fully discussed. The Committee considered the estimates of fixed and working capital and operation costs as both conservative and fair.

The Committee agreed that the anticipated return of 9 per cent is fair and reasonable.

VI. The Committee recommend that in view of the magnitude of the operations involved, the close attention to the successful ~~for~~ establishment and development of the industry that will be required, the problems involved in the designing, production and marketing of the finished articles, the manu-facture of Moulding Powders and Moulded articles should be taken up by a new concern, which may be given some such name ~~some~~ as the Mysore Plastics Products Ltd.m with a capital of 7 to 8 lakhs of rupees. The Committee recommends that

that in view of the fact that the main ingredients of the Moulding Powders, viz, Urea and Formaldehyde have to obtained by the new Plastics Concerns and other Government or Government controlled concerns namely Mysore Iron and Steel Works, Bhadravati and the Sugar Co.,Mandya, (in the latter the Government have a predominant interest) that the new concerns be a Joint Stock Company,like the Sugar Co. with predominent Government interest, namely 60 per cent of share capital.

In case the Gover ment are not willing to invest this large capital, they might participate in the new concern by taking ten per cent of their share capital in accordance with their general policy.

This new concern may be located on a suitable site near the Government Electric Factory and would obtain the two important items of raw materials from the other concerns on a ten years guarantee, at cost plus basis. The Committee feel that arrangements could also be made to asecure supplies of Phenol during the period of war with the assistance of the Government of India, Supply Department. The Committee request that their proposals receive the early consideration of Government.

The Mysore Iron and Steel Works, Bhadravati.

Scheme for the Plastic Concern.

1. The Plastics concern will be floated with a capital of Rs 10 lakhs.

The capital will be distributed somewhat as follows:-

Formalin Plant	Rs 1,00,000/-
Moulding Powder Plant.	1,00,000/-
Moulding Plant	1,00,000/-
Laboratory	20,000/-
Site and Building.	2,30,000/-
Working capital.	3,00,000/-
Total.	8,50,000/-

(Urea Plant will be obtained separately by the Mysore Sugar Co.,Ltd.,Mandya.)

2. The concern will execute necessary deeds, obtain concessions from Government and make contracts for the following:-

a) Site for the factory.
b) Power at concession rates.
c) Water.
d) Methanol from Bhadravati at cost plus 10% alternatively supply of Formalin from Bhadravati until the Formalin plant is erected in Plastics concern.

Purchase of Formalin Plant from Bhadravati,if a new Formalin plant is not available from abroad.

e) Urea from Mandya at cost plus 10%,price being at comparative market rates.
f) Obtain permits from the Government of India to import raw materials and machinery during war period.

3. The Plastics concern will take up immediately the following work as building and plant:-

a) Construction of buildings.
b) Purchase of the moulding section from the Government Electric Factory and installing it in the new concern with any additional equipments or improvements for moulding thermosetting and thermoplastic powders and also pressing laminated sheets plastic hearings, plastics gear wheels,etc.

Since a die-making section is essential for the moulding plant, the die-making section now in the Government Electric Factory will either be purchased or an agreement will be made with Government Electric Factory for supply of all necessary dies at cost plus 5 or 10% until the Plastics concern is able to make its own arrangements.

c) Immediate steps will be taken to collect machinery(either by purchasing from abroad, or local fabrication or collection from factories in India) for the manufacture of Bakelite moulding powders; capacity of plant will be about one ton of powder per day.

The semi-commercial moulding powder plant at Bhadravati will be purchased and worked in the new concern until the bigger plant comes into operation; after that period the small plant will be used in development work.

d) Urea Formaldehyde moulding powder plant.
e) Callulose Acetate moulding powder plant.
f) Casein Plastcis plant.
g) Equipment for manufacturing special resins for making adhesives for plywood and laminated sheets for oil varnishes and baking enamels. cost pheonalic resins etc.

4. The Plastics Concern will have a technical laboratory for:

a) Analysis and control of raw materials and finished products.
b) Developments.

5. The concern will do all possible help to get a Urea plant from abroad and arrnage for supply of ammonia to Mysore Sugar Co.,Ltd., Mandya, at cost plus 10%.

Staff and overhead for plant.

1	Manager	Rs 400/-
3	Shift Superintendents on Rs 100/- each a month	300/-
1	Chemist.	100/-
1	Sales and Purchase Officer	75/-
6	Minor supervisory staff, clerks and store-keeper on Rs 50/- each	300/-
1	Fitter on Rs 2-8-0 per day.	75/-
50	Workmen on Rs 20/- a month.	1,000/-
	Rs	2,250/-

Profit and Loss statement: -

Taking an average net profit of 0-3-0 for every pound of

of moulding powder manufactured and moulded in the Plastics concern, the average net monthly profit after paying depreciation at 10% and interest on capital at 6% will be Rs. 6,300/- for an average production of 15 tons of powder for month. This will amount to about9% per annum on the invested capital of Rs 8,50,000/-.

In the above estimates, profits from special products like plywood adhesive, lamination sheet, varnish and enamel resins, which the concern proposes to develop are not taken into account.

The profit of Rs 0-3-0 per lb. of powder assumed in the estimate is very conservative because under normal post-war condition the price of Formalin and urea willbe such below the prices taken for making the cost estimate.

GOVERNMENT ELECTRIC FACTORY.

REPORT ON THE BAKELITE WORK IN THE GOVERNMENT ELECTRIC FACTORY.

The total investment on the Bakelite section of the Government Electric Factory, Bangalore comes to Rs 87,495/- as per records, out of which the cost of machinery alone comes to Rs 49,598/Rs; the rest being distributed over dies and jigs, tools, fixtures, furniture and other equipment. The machinery list and the list of dies available are enclosed for kind reference.

The rate of depreciation allowed on machinery is only 7½% and the annual repair and renewal charges roughly come to Rs 500/-.

If the production capacity of the existing plant means the number of poundsof powder that can be moulded successfully into articles of value, it would be about 2 Cwts-5 Cwts, at the maximum for a day of 8 hours duration. The cost of production of the articles varies very greatly with different articles and it has generally varied from Re.1/- to Rs 3/- for moulding one pound of powder into useful articles, during the last three years. The primary factory that increased the production cost is the increase incost of powder and the maintenance charges of the machines in good working condition.

The products that can be manufactured here in our factory may be, roughly classified into three groups namely articles meant for Electrical Industry; articles used for the mechanical trade and finally the articles which have only domestic value. The articles that can be made in this factory could be understood by locking at the list of dies available for use, appended to this report. The appended list also contains the comparative costs of some articles for the past three years.

The Electrical equipment requires a Testing House for testing the dielectric properties of the powder and of the mouldings. The mechanical strength and resistance to shock of moulded articles are known by impact testing machines which would give correct indications of the quality of the product. Thus we see the necessity for a small equipped laboratory for such a purpose. Further, such a thing will enable our articles to be standardised.

The most important point for consideration is the faci-

facility of a good Tools Room exclusively for this industry since the different sets of dies have to be kept always in good condition and new signs incroporated to suit new require -ments of increased production and economy in labour charges. The present Tool Room has been serving all shops and in parti -cular is helpful in making necessary dies and perches for the metal pressing and Big Press Sections. When urgent orders are undertaken in Big Press Section and Metal Press Sections there will be much difficulty in catering to the needs of the Bakelite Section. Either a separate Tool Room fully equipped with modern machine toolslike a Precision Lathe, Milling Machine. Duplicators, Engraving Machine etc. be made available forthis work.or the existing Tool Room enlarged to suit the increasing needs of the developed Bakelite Industry.

One other factory that seems to hamper our increased production is the increased cost of labour in Bangalore. Just as in big Industrial Centres, labour saving devices have to be adopted. All our machines are hand-operated ones and the control of production can never be satisfactory since the human factor enters into every operation whether in the begin -ning or in finishing stage. To avoid all this and to in- crease production, it is better to equip the existing machines with hydraulic appliances so that it may run an a power driven basis. In such a case we can try the multiple Mould- ing System when the same machine can be expected to give increased production. Further, such a change would make the several operations fool-proof and thus the much required uniformity of pressure while pressingis ensured resulting in better quality product.

GOVERNMENT ELECTRIC FACTORY.

QUANTITY OF BAKELITE POWDER PURCHASED ANNUALLY.

Year.	Scarab.	Cresol	M.I.S.W. powders.	Tenite powder.
	Lbs.	Lbs.	Lbs.	Lbs.
1939-40	4,621	23,996	...	...
1940-41	17,659	18,696	...	...
1941-42	22,041	19,926	9,359	10,000
1942-43 (up to 31-12-42)	67,498	20,000	916	..
	11,819	82,618	10,275½	10,000
Latest rate.	Rs 1/10/6 Per lb.	Rs 1/2/6 per lb.	Rs 1/0/0 per lb.	Rs 1/8/0 per lb.

Annual consuption. 225 tons.

capacity 300 tons.

GOVERNMENT ELECTRIC FACTORY.

List of machiney in the Bakelite section.

Sl. No.	Name of machinery.	Quantity.
1.	50 tons moulding press.	7
2.	35 -do-	3
3.	75 -do-	2
4.	15 -do-	5

GOVERNMENT OF HIS HIGHNESS THE MAHARAJA OF MYSORE

No. P. 38

General and Revenue Secretariat

Dated, Bangalore, 24th April, 1944.

From

The Secretary, Board of Scientific & Industrial Research.

To

[illegible]
Electrical Engineer, [illegible] and Convener,
[illegible] Sub-Committee, Government Electric
Factory, Bangalore.

Sir,

Subject: Constitution of a Sub-Committee of the Board of Scientific & Industrial Research - Co-ordination.

I am directed to state that the Committee having completed the work entrusted to it, the above sub-committee of the Board of Scientific & Industrial Research, is dissolved. Further work relating to the investigation of Alumina, required for the Mysore iron and steel works, Bhadravati, will be watched and further action taken by the Board of Scientific and Industrial Research.

I have the honour to be,
Sir,
Your most obedient servant,

M. Z. Kazmi.

Secretary.

Appendix F. G.—1]

SUBJECT Plastics Sub Committee of the Board of Ind. Planning ~~& Work~~

Section D.P

File No.

Serial No.

Diary No. of letter replied to.....

No. D.P. 338/43

~~To~~ S. V. Rama Rao Esq. B.Sc.
Commercial Plastics Sub-Committee, Gaut Electric Factory, Bombay

General and Revenue Secretariat

( )

the *194* .

Date of issue... 21-4-43

Signed by... for T.S.

Sir,

I am directed to state that the Sub Committee having completed the work entrusted to it, the above Sub Committee of the Board of I.P. is dissolved. Further investigations in the plastics work including further investigations on plastics carried out at the M.S.W. Bhadrawati, will be watched & further action taken by the Board of Sc & Ind.

List of enclosures.....

Copied by.....

Examined by.....

WD 04161—GPB—60,000—24-10-41

Research

Sd

28/4/[illegible]

J.P. 339-[illegible]

Cy 240 Members of P.S. Committee

" Ly J.P.C Committee

" G. M. M. Law

" Heads of Depts

" Comptroller & Govt

Sd

20/4/04

Sl.No.	Name of machinery.	Quality.
5.	Grinding machines.	2
6.	Polishing machines	4
7.	Drilling machine	1
8.	Tabletting machine.	1
9.	Injection Moulding Machines	1

Government Electric Factory.

Bakelite Mouldings.

1.	Machinery and Motors.	Rs 49,590/-
2.	Dies and Jigs.	26,271/-
3.	Loose Tools.	1,484/-
4.	Fixture and Fittings.	4,242/-
5.	Furniture	2,170/-
6.	Buildings.	3,738/-
	Total	87,495/-
	Less depreciation (approximately)	Rs 17,000/-
	Approximate present value.	Rs 70,495/-

" C o p i e s "

Secretary,
Board of Industries and
Commerce.

PSS.